MITERSAW WORKSTATIONS We take a stand on the best models *Page 66*

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THE WORLD'S LEADING WOODWORKING MAGAZINE

ISSUE 118 NOVEMBER 1999

Oh what fun it is to build our

SLEIGH COFFEE TABLE

See page 72

More Holiday Projects!

- Stylish table lamp and veneer shade
- Turned bird feeder
- Big rig for toy cars
- Nutcracker in a box

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We'll show you how *Page 43*

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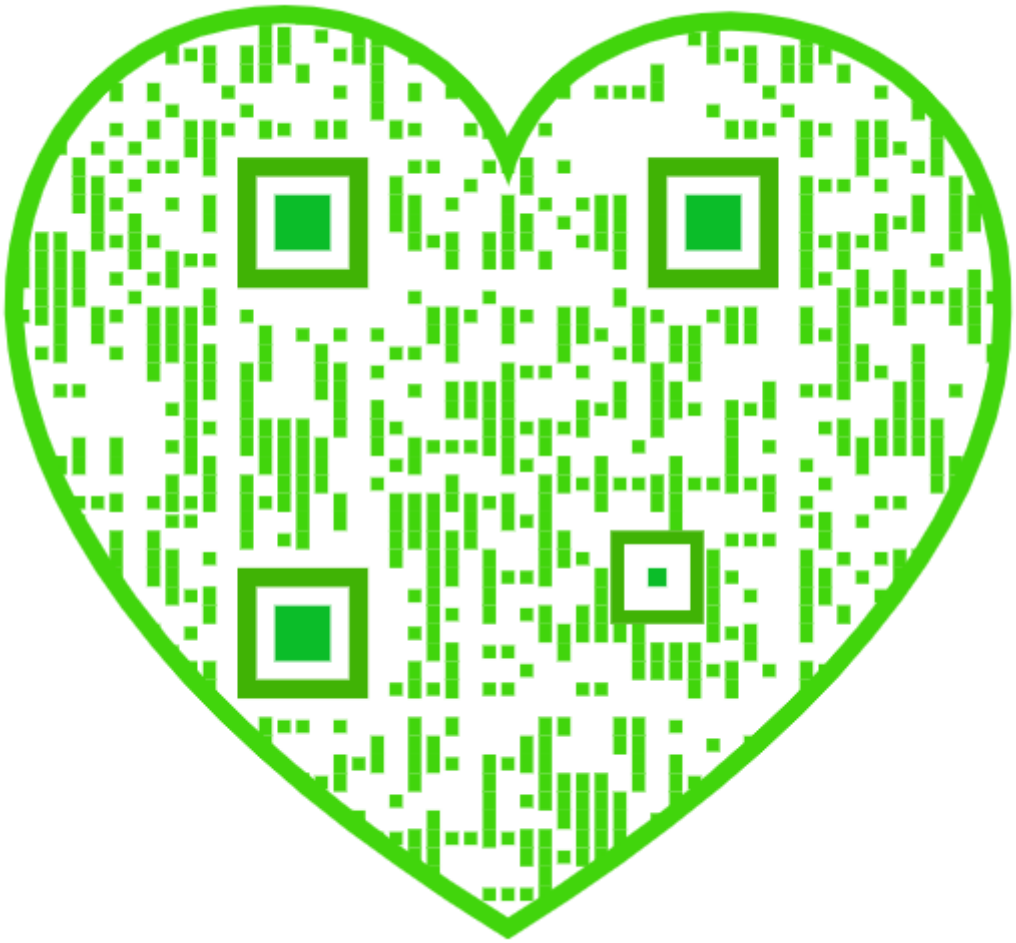

ISSUE NO. 118 NOVEMBER 1999
This issue's cover wood grain: pecan

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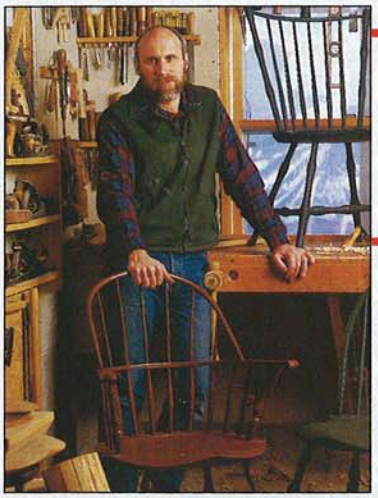

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Cover photograph: Steve Struse

Our new Senior How-To Editor Bill LaHay (right) gets a few helpful hints about the upcoming nesting-table project from his predecessor, Marlen Kemmet.

We'll Do Anything To Make You A Woodworking Success

Here at *WOOD*® magazine, we take our journalistic responsibilities seriously. You wouldn't believe the check-and-balance procedures we have in place to ensure the accuracy of the information we share with you. After all, you're paying good money to hear what we have to say about your favorite hobby. You deserve the best we can deliver.

Nowhere do we spend more time and effort than in the preparation of our woodworking project articles. Computer verification of dimensions and drawings; several editings by the article author, project builders, and editors; and final checks by technical illustrators—we do it all. And yet, mistakes do occur sometimes, and our policy always has been to report these mistakes to you.

So you can imagine my trepidation when Marlen Kemmet, our long-time Senior How-To Editor, decided to join our marketing operation to focus his efforts on WOOD ONLINE®, our internet site. Marlen had been with us since issue 2 (November/December 1984). Fortunately for us, this true-to-the-end trooper agreed to keep shepherding projects through the system until we found his replacement. Thanks for hanging in there, Marlen.

Finally, after what seemed like an eternity, we hired Bill LaHay (that's him on the *right* with Marlen in the photo *above*) to help continue our long tradition of project-writing excellence. This new hand brings lots of experience in woodworking and publishing. He has been a team member at both *Workbench* magazine and *Woodshop News*, a monthly trade magazine.

In his new role, Bill will be collaborating with Larry Johnston, our senior special-interest editor, and the rest of the project-management team. And even at this early date, my guess is that we're going to be as strong or stronger in this area than ever before. Welcome to the wide, wonderful world of *WOOD* magazine, Bill. We're glad to have you aboard.♣

Larry Clayton

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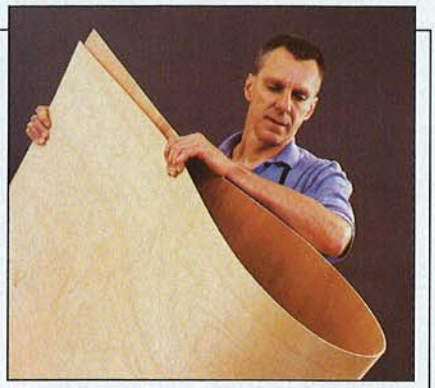
TALKING BACK

Desperately seeking bending plywood

I'd like to make the steamer trunk in issue #110 for my granddaughters, but my lumber supplier has never heard of "⅛" bending plywood." Where can I buy it?

—T.B. Alderson, St. Charles, Mo.



We bought our bending plywood from Paxton Lumber in Des Moines, Iowa. You can call Paxton's Gordon Buttery at 515/283-2137 for pricing and availability there or at other Paxton stores. Another source is Riteco Supply, in Houston, Texas, 713/896-6200. Heritage Building Specialties, 205 North Cascade, Fergus Falls, Minn. 56537, sells a mail-order kit (No. W1102) with all of the wood for this project for $269.95 ppd. Or, you can buy just the plywood at $53.95 ppd. per 4×8' sheet. Phone 800/524-4184 to order.

No wheels for your Sidewalk Speedster?

Apparently, the 10×1¾" plain bore wheels needed to build the Sidewalk Speedster project in Issue 115, June 1999, aren't as easy to come by as we thought. A number of readers have called or written asking where they can get them.

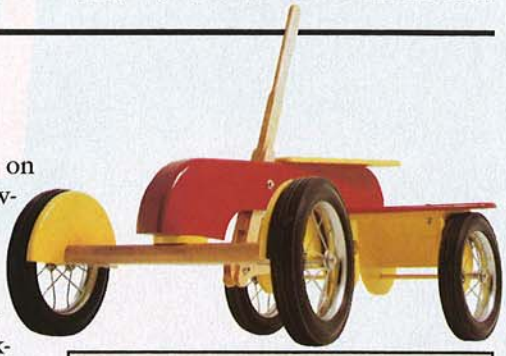
We checked with both TruValue and Ace Hardware (both national hardware chains) and each company stocks them in its regional warehouses if not its local store. Here are the respective stock numbers for the 10×1¾" plain (no bearing) ⅜" bore, spoked wheels: TruValue, Item No. 469 844, currently $9.39 each; Ace Hardware, Item No. 71914, priced at $8.99 each. Your nearest store can special order them for delivery in one to two weeks.

If there isn't one of these stores near you, you can order wheels for $8.99 each plus about $6.50 shipping (for four) directly from Miller Hardware in Des Moines, Iowa. Call 515/283-1724. Ask for Dennis or Dave.

A quick fix for the Sidewalk Speedster

If you haven't already picked up on this error, please make the following correction to the plan for the Sidewalk Speedster Irish Mail project in Issue 115, June 1999. In the Bill of Materials specifications on page 60, change the thickness of part P to ⅝".

We apologize for this inconvenience. Our special thanks to those sharp-eyed readers who called this to our attention.



Bill of Materials

Part	Finished Size			Matl.	Qty.
	T	W	L		
P rod top/bottom	⅝"	⅝"	18"	M	2

We would like to hear from you

We welcome your comments, criticisms, suggestions, and yes, even compliments. We'll publish letters of the greatest benefit to our readers. Write to: Talking Back, *WOOD* Magazine, 1716 Locust St., GA310, Des Moines, IA 50309-3023

Continued on page 8

Continued from page 6

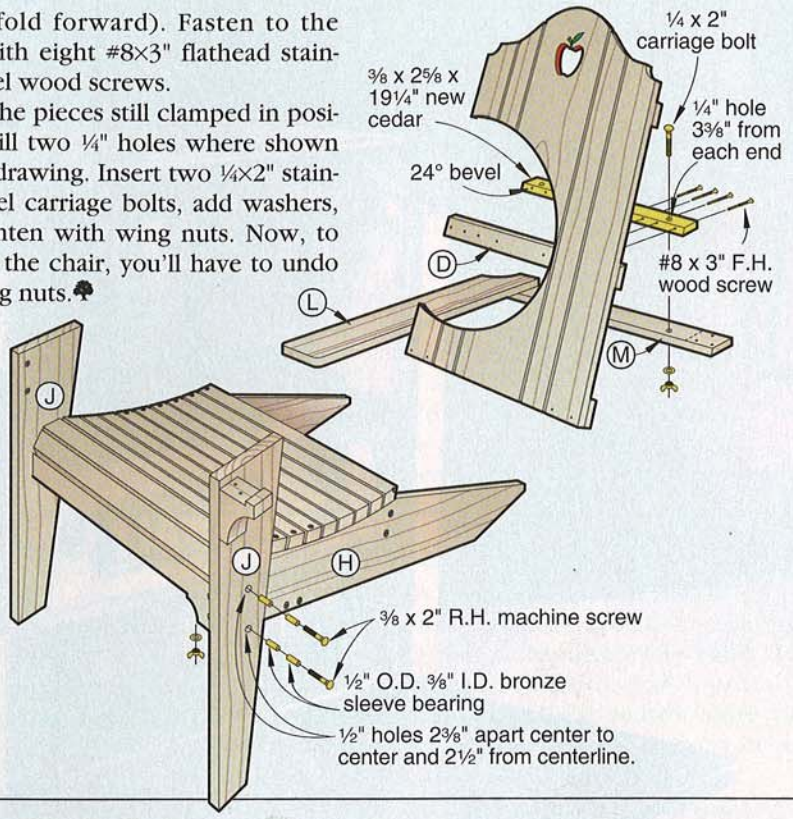
Too easy to fold up

Our Adirondack chair project in Issue 115, June 1999, folds up for storage. Due to that feature, several readers brought to our attention, the back can also fold forward when you least expect it. Here's a way to remedy that, and still keep it collapsible.

With the legs (part J) in upright position, clamp each to its corresponding part H. Now redrill the original ⅜" and ¼" holes to ½" diameter. Then, insert ½" O.D. ⅜" I.D. bronze sleeve bearings ¾" long into each hole (Ace Hardware part no. SEB871, 1" length requires cutting; eight per chair). Place ⅜×2" stainless steel roundhead machine screws into the sleeve bearings as shown, add washers, and tighten with wing nuts.

Next, cut new cedar stock to ¾×2⅝×19¼" and bevel one edge to 24°. Drill eight ⅝₃₂" shank holes as shown in the drawing. Place the stock on top of part M and clamp in position (also clamp the back so that it won't fold forward). Fasten to the back with eight #8×3" flathead stainless steel wood screws.

With the pieces still clamped in position, drill two ¼" holes where shown on the drawing. Insert two ¼×2" stainless steel carriage bolts, add washers, and tighten with wing nuts. Now, to fold up the chair, you'll have to undo the wing nuts.


¼ x 2" carriage bolt
⅜ x 2⅝ x 19¼" new cedar
¼" hole 3⅜" from each end
24° bevel
#8 x 3" F.H. wood screw
D
L
M
J
J
H
⅜ x 2" R.H. machine screw
½" O.D. ⅜" I.D. bronze sleeve bearing
½" holes 2⅜" apart center to center and 2½" from centerline.

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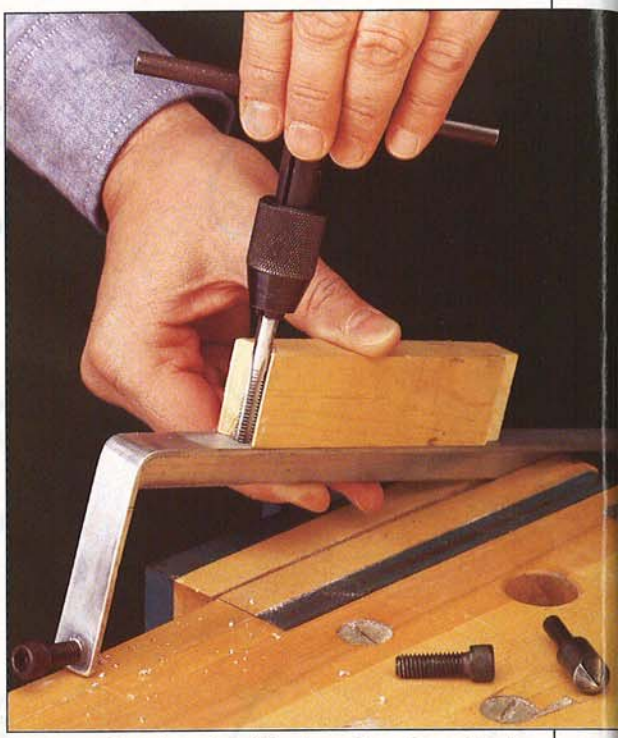
Circle No. 1312

HOW TO THREAD METAL

Tap into this handy technique

Screwing a threaded fastener into a tapped hole in metal is often easier and neater than using a nut. And bolting an oft-used jig or fixture to a tapped hole in a metal tool table is usually quicker and more secure than rigging up clamps. Here's how to thread holes in metal parts easily.



When cutting threads with a hand tap, keep the tap straight as you run it into the hole. A simple V-block will do the trick.

The language of threads: here's how to read the numbers

The description of an American thread (see *bottom center*) must specify at least two attributes—diameter and number of threads per inch (TPI).

The diameter may be stated as a gauge number from 0 to 14 (**8**-32 or **10**-24, for example), where a larger number indicates larger diameter. Or, it may be expressed in inches and fractions (as in ¼-20 or 1⅛-12).

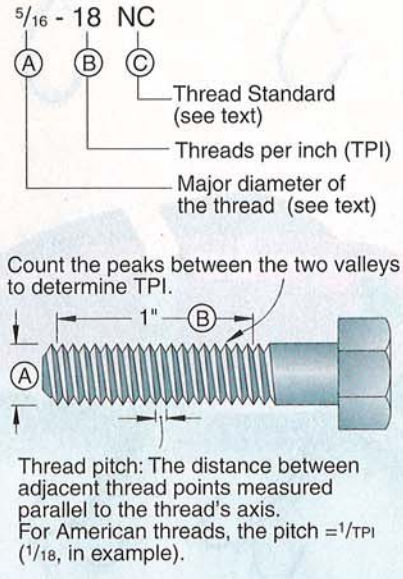
The standard the thread conforms to—which isn't always given—refers to the American National Threads (or U.S. Standard Threads). Industry adopted these standards, which specify thread angle and other parameters, early in this century to end the confusion caused by a profusion of noninterchangeable threads.

You'll usually encounter NC (national coarse) and NF (national fine) on fasteners. For any diameter, an NF screw carries more threads per inch than an NC. NC threads also may be called USS (United States Standard) or UNC (Unified National Coarse); NF can go by SAE (Society of Automotive Engineers) or UNF (Unified National Fine). You'll often see NPT, too, which refers to tapered pipe threads.

Metric threads are specified by diameter and pitch (the distance between two adjacent thread points), both given in millimeters.

An inexpensive thread gauge determines the number of threads per inch more readily than counting, especially on fine-threaded screws.

NAME THAT THREAD


5/16 - 18 NC
A
B
C
Thread Standard (see text)
Threads per inch (TPI)
Major diameter of the thread (see text)
Count the peaks between the two valleys to determine TPI.
1"
B
A
Thread pitch: The distance between adjacent thread points measured parallel to the thread's axis.
For American threads, the pitch = 1/TPI (1/18, in example).

Three types of tools tap threads

A tap cuts threads in a hole. You drive it with a tap wrench, shown *below*. You can buy taps singly or in

Tap wrenches come in T style (in back) or straight (front). The T style grips like a router collet.

Continued on page 14

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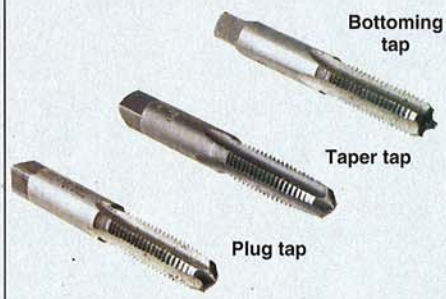
HOW TO THREAD METAL

sets from hardware stores or auto-parts dealers, among other places. Individually, they're usually available in three styles (shown *below*):

✔ **Plug.** This is the general-purpose tap. The first 3-5 threads on the end are ground to a taper for easier starting. Most sets contain plug taps.

✔ **Taper.** A point 8-10 threads long makes this tap easier to start in tough materials, such as stainless steel.

✔ **Bottoming.** More blunt, this tap cuts to within one or two threads of the bottom of a blind hole. Thread the hole as deep as you can with a plug tap; then go in with this one.



To make good threads, start with accurate drilling

To drill for threads, heed these tips:

✔ **Go to the drill press.** Drilling through metal any thicker than a car fender quickly turns tedious; a hand-held drill probably will waver from the desired angle. If the workpiece is too cumbersome to drill on a stationary machine, employ a drill guide, such as a V-block, to drill a true hole.

✔ **Centerpunch the mark.** A twist drill will walk all around a mark on metal—even when you're using a drill press. With advanced-design twist drills, designed to dig right in, we still like to centerpunch hole locations on metal; it's easier—and more precise—to line up the drill over a punched point than a scribed mark.

✔ **Drill the hole the right size.** Tap-drill charts show the correct hole size for various threads. (See drill sizes for common threads on the chart *right.*)

Tapping threads into a hole of the size shown in the chart's *tap drill* column provides 75 percent thread depth. This standard depth balances ease of threading and assembly with strength. (Going from 75 to 100 percent thread depth strengthens the connection by only about 5 percent.)

If you don't have letter- or number-size twist drills, a bit of the *close fractional size* shown will do the trick, as shown *right.*

Follow this advice to tap top-notch threads

✔ **Chamfer the hole.** Break the sharp edge at the top of the hole just slightly with a quick twist of a countersink. Clean out all the chips.

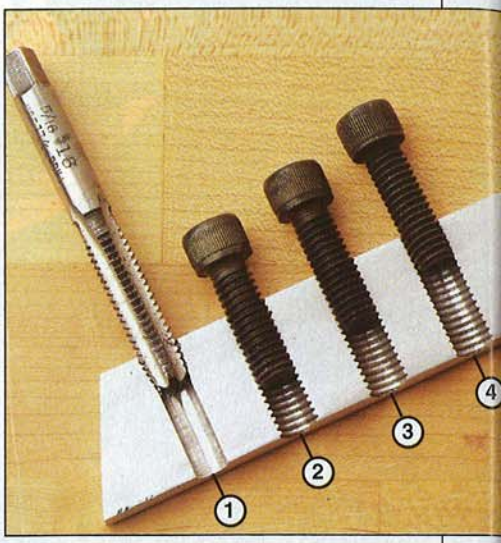
✔ **Start the tap straight.** Just as you can cross-thread a nut onto a bolt, you can start a tap into a hole cockeyed. The surest way to a straight start is to use your drill press—unplugged. After drilling the hole, chuck the tap in place of the bit. Then pull down the chuck and turn it by hand to start the tap into the hole, as shown *right.*

DO NOT try to power-thread. Cut two or three threads—enough to get

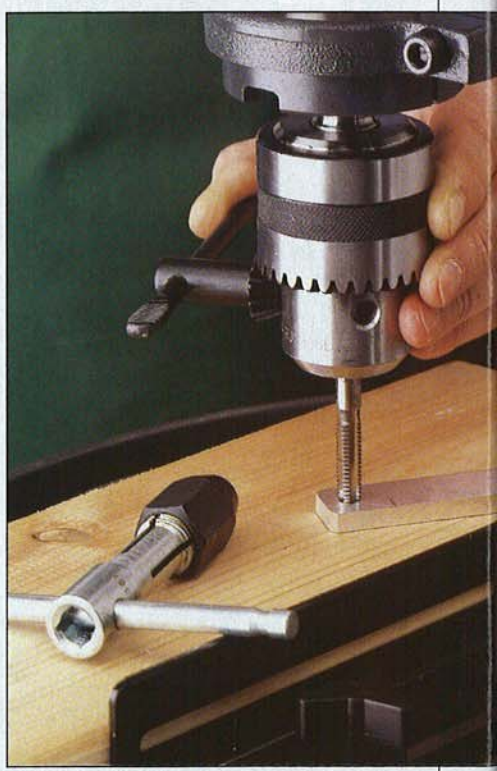
Continued on page 16

Drill sizes for some common American Standard threads

Thread dia.	Threads/inch	Std.	Tap drill	Close fractional size
#4	40	NC	#43	3/32"
#4	48	NF	#42	3/32"
#5	40	NC	#38	3/32"
#6	32	NC	#36	7/64"
#8	32	NC	#29	9/64"
#10	24	NC	#25	5/32"
#10	32	NF	#21	5/32"
#12	24	NC	#16	11/64"
1/4"	20	NC	#7	13/64"
1/4"	28	NF	#3	7/32"
5/16"	18	NC	F	17/64"
5/16"	24	NF	I	17/64"
3/8"	16	NC	5/16"	—
3/8"	24	NF	Q	21/64"
7/16"	14	NC	U	3/8"
7/16"	20	NF	25/64"	–
1/2"	13	NC	27/64"	–
1/2"	20	NF	29/64"	–



Here's what happened when we tapped different-size holes with a 5/16-18 thread. The tap jammed in a too-small 1/4" hole, no. 1. Well-formed threads resulted in hole no. 2, drilled with the prescribed letter F drill, and hole no. 3, drilled to the recommended fractional size of 17/64". Threads in a too-big 9/32" hole, no. 4, barely engage the screw.



Turn the drill-press chuck by hand when guiding a tap into the hole. The chuck key gives added leverage. Once you've started the tap, complete the threading with a tap wrench.

Continued from page 14

HOW TO THREAD METAL

the tap started. Then, unchuck the tap, and finish up with a tap wrench.

If that's not possible, guide the tap straight in with a V-block (as shown in the *opening photo*) or a square.

✔ **Break the chips often.** Turn the tap backward one turn after every two or three turns forward. This will help break and extract the chips, and result in a cleaner thread.

✔ **Lay on the lubricant**. Keep the tap well-lubricated for better cutting and to minimize the chances of breaking it. (Taps are hardened, thus brittle.) Regular motor oil, automatic-transmission fluid, or thread-cutting oil (available from hardware stores) do the job just fine in a home shop.

✔ **Run the tap all the way in.** For through holes, run the tap all the way into the hole. The cutting edges at the top of the tap, which probably will be sharper than the hardworking ones near the end, will refine the thread. After use, clean the tap with an old toothbrush.

✔ **It's taps for bad threads.** Run a proper-size tap into dirty or damaged threads to clean and restore them. For stripped threads, you may be able to drill out the hole and tap it for the next larger thread.

Photographs: Baldwin Photography
Illustration: Roxanne LeMoine; Lorna Johnson
Written by Larry Johnston

External threads are to die for

A die, shown *below right*, forms external threads. The nominal diameter of the thread equals the diameter of the rod to be threaded. (Cut ¼-20 threads on a ¼"-dia. rod, for example.)

Before starting, grind or file a slight, even chamfer on the end of the rod to be threaded. Start the die from the side marked. You also can rely on a die (or even better, a special rethreading die) to restore damaged threads.

A die (this one's hexagonal; you'll also find round ones) cuts external threads. The die stock—the handle—takes dies for various-size threads.

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This amazing secret is now the foundation for my entire business. I tease my friends that it's like the "goose that lays the golden eggs". It lets me make an average of $1,113 a day (that's $23,355 a month) with my woodworking business. Sometimes, I work a week then take the next 3 weeks off. The System continues to bring in money.

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Sanding

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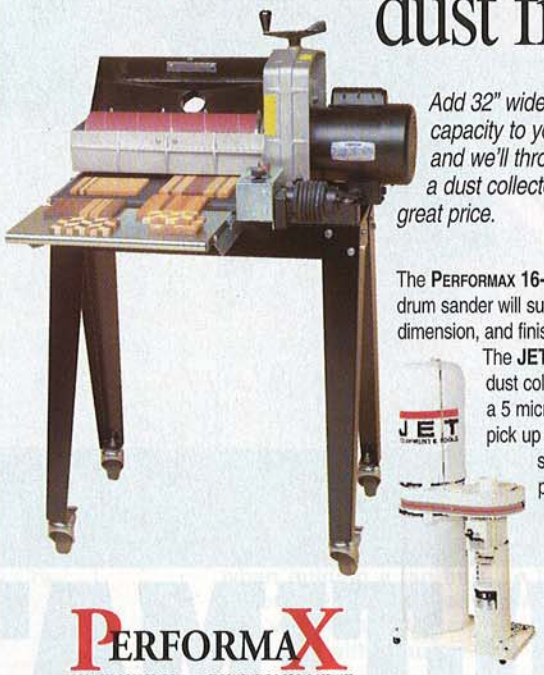

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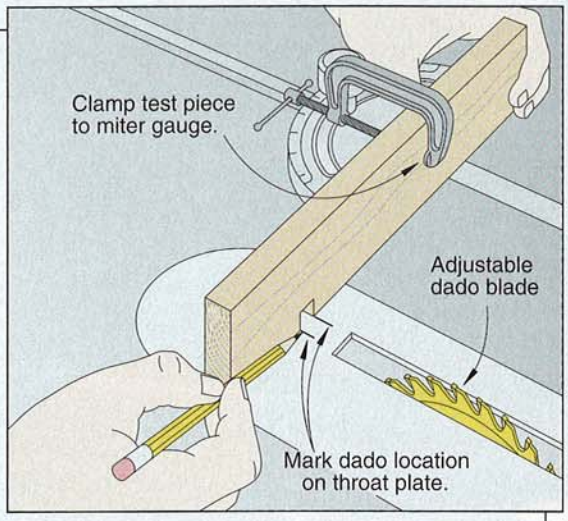
Are You Stumped?

If you've got a question that you think would interest other readers, we would like to hear from you. Write to: Ask *WOOD*®, 1716 Locust St., GA310, Des Moines, IA 50309-3023. For an immediate answer to your question, try posting it on one of our 10 internet discussion groups at: www.woodmagazine.com

An easy way to calibrate an adjustable dado blade?

When I use my adjustable dado blade, I find it hard to pinpoint the exact cut location. Sometimes I dial the blade to the setting I want, and mark the outside tooth with a red marker, but that's the only method I know. Any other suggestions?

David Nelson, Houston, Texas



Sorry we can't offer better news for you, David, but when it comes to "wobble" dadoes, as they're sometimes called, a little guesswork is just the nature of the beast. By sighting opposite the blade's adjustment hub, it isn't that tough to locate the outside tooth and measure its distance to the fence, but you still want to make a test cut to be sure. You need to check for correct cut width anyway, so just consider trial cuts (in scrap stock) part of your routine whenever using the blade.

If you're guiding the stock with the miter gauge, clamp a test piece to the gauge's head and back the piece up after the cut. Turn the saw off; then mark the edges of the cut on your tablesaw's throatplate for reference.

Why does plywood twist and warp after I cut it?

When I buy ¾" plywood, I look carefully to make sure the sheets lie nice and flat. But when I cut them into cabinet doors they twist and warp. I've had it happen with 5-ply and 7-ply sheets, made from different kinds of wood. What's going on, and what can I do?

Orlando Voth, Goessel, Kan.

Without knowing the type and grade of plywood, how it's stored, and what conditions are in your shop, it's hard to know exactly why your plywood is misbehaving, Orlando. Ideally, the panels should be stored flat and protected from extremes of temperature and humidity. Never lay sheets directly on a concrete floor or store them where one side will be exposed to moisture (or free air) while the other side is covered. This should help some.

If the problems occur only after the plywood is cut, the fault probably lies within the material itself, and that's harder to predict and to cure. You know how solid wood can distort when it's cut, maybe pinching a saw blade or just twisting out of shape? Well, those same internal stresses can affect plywood as well, though theoretically they shouldn't.

That's because plywood's construction—multiple thin layers laminated cross-grain to each other—is supposed to prevent this instability. We too sometimes get plywood that misbehaves, so we decided to pursue your question a little further with help from the research engineers at the U.S. Forest Products Laboratory in Madison, Wisconsin. They offered up two suspects that might be making today's plywood more troublesome than the stuff we used to get.

First, the biggest old-growth trees are largely gone, and many trees that get peeled for plywood veneers are young, "plantation-grown" specimens. These trees are managed heavily to grow rapidly and add bulk. The wood they produce is not nearly as dense or stable as the stock you'd get from a slow-growing tree that matured under natural conditions. When harvested, these trees yield mostly "juvenile" wood, and the plywood made from them naturally shares some of the same bad habits.

Second, the rotary lathes used to peel veneers from logs have gotten more efficient. It used to be that a log would be turned down to a 5"- or 6"-diameter "peeler core" to be sold as a landscape timber, while the veneer went to the plywood press. Newer machines can take the peeler core down to 2", and that extra veneer yield is all juvenile wood that again makes for problem plywood.

There's no easy fix here. Sometimes it helps to mist the cut pieces with water from a spray bottle, then clamp them flat or in a "reverse" twist until they dry and set that way. Otherwise, try to store the full sheets flat until they stabilize and acclimate to your shop.

Continued on page 22

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ASK WOOD

Continued from page 20

Taking grandpa's chair apart

I have an antique chair given to me by my grandfather. Over the years, some of the rungs have split and another has broken completely. How can I take the chair apart without breaking the joint tenons?

—Robert Bantly, Hardwick, Vt.

In all probability, Bob, your chair has hide glue holding its joints together. Hide glue, and most other furniture glues used in the past, were not formulated to be water or heat resistant. So, you should have good luck loosening these joints with a combination of heat and water.

First, because you will often have to remove more than one piece to repair a chair, it's a good idea to label the parts with masking tape before disassembly. Next, use a water dropper to get water directly into the joint. Then, apply heat to the joint with a lamp on one side and reflector (aluminum foil) on the other. A hair dryer also works, but take care not to scorch the finish.

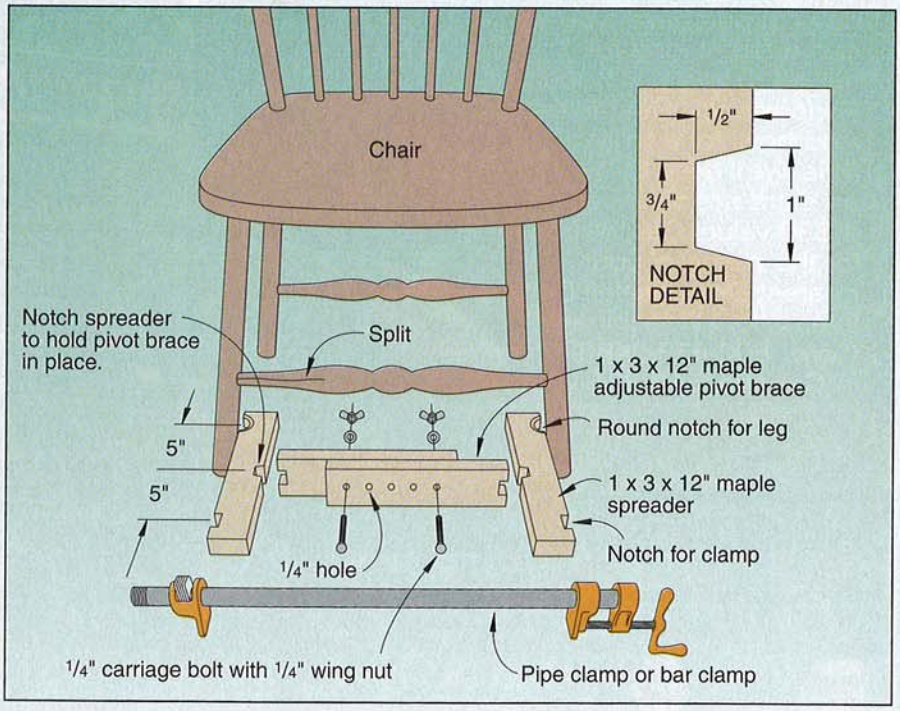
Use a spreader, instead of a mallet, to carefully separate the joints. With a mallet, it's easy to accidentally break sound chair parts. Some bar clamps have a reversing feature that allows them to be used as spreaders. But, you can build your own spreader, like the one shown *below*, to remove a split or marred chair part.

Make the spreader from a sturdy wood, such as hard maple. Cut rounded notches in the jaws to keep the jaws from slipping, and round over the edges of the notches to avoid damaging the piece.

Next, cut flared notches in the legs of the spreader to hold the pivot brace in place and to allow the legs to move. Drill ¼" holes in the two-piece pivot brace to make its length adjustable. Hold the pivot brace together with ¼×2" bolts and ¼" wing nuts.

Finally, make notches in the handles of the legs to hold the clamp in place. Use any kind of long clamp, such as a pipe clamp or bar clamp, to tighten the spreader.

Our spreader jig will work for most chairs and chair parts, but you may want to change the dimensions to put it to work for other jobs.



Continued on page 24

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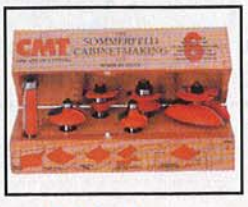

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ASK WOOD

Continued from page 22

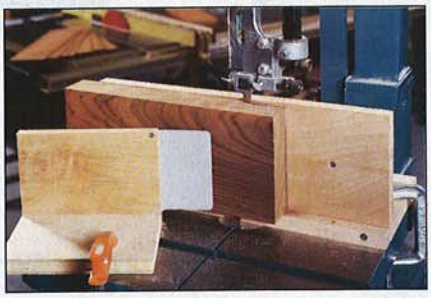
Need thin stock? Here are three ways to get it

I am interested in building the pedestal you featured in issue #104 of WOOD *magazine. However, I am having problems locating the ½" oak stock the project calls for. None of the local lumberyards I've checked with carry ½" stock. Are there specialty sources for thin wood?*

—Pete Damico, Hurst, Texas

There are three ways to lay your hands on thin stock, Pete. The most common, but also most wasteful, method is to plane standard sizes of stock down to the thickness required. You can thickness-plane with machine planers, hand planes, or jointers. This method is wasteful because all of the removed stock is turned into dust or shavings.

A more difficult, but less wasteful, method is to re-saw stock. You can set up both a bandsaw and a tablesaw to do this with jigs (like the one *below* from issue #109 of *WOOD* magazine). Resawing gives you several thin pieces from one board and the only waste comes from the kerf of the saw blade.



If you don't have access to any of the machines needed to make thin stock, you can purchase thin stock from hardwood supplier chains such as:

Steve Wall Lumber
P.O. Box 287
Mayodan, NC 27027
call: 800/633-4062

Heritage Building Products
205 North Cascade
Fergus Falls, MN 56537
call: 800/524-4184

Woodcraft
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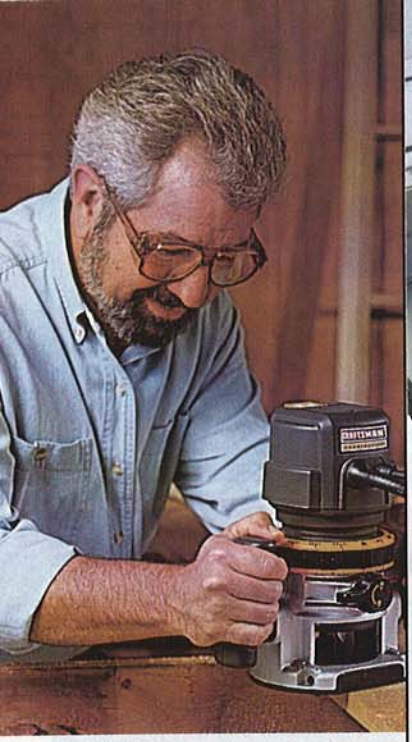

STEP OVER TO A ROUTER TABLE RIGHT ON YOUR TABLE SAW!
Craftsman router table extension attaches right on your table saw, saving you time and footsteps. Make a cut on the saw then switch over to route the edge, all in one location. Ideal for trim work & molding, plus, it adds versatility to your saw.

Craftsman leads the way in innovation, both big and small. Whether it's a major design breakthrough or just a small time-saving feature, Craftsman power tools keep getting better year after year!

THE FUTURE OF TOOLS

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Craftsman power management in the workshop
The Craftsman Automatic Power switch is a 3-outlet power source that allows you to operate a power tool and two accessories such as a wet/dry vac & worklight at the same time. Plug a power tool into the top outlet and accessories into the two bottom outlets. When the power tool is turned on, it simultaneously activates the accessories. It's rated at 110 volts and can be plugged into any standard household outlet.

A RADIAL SAW THAT'S RADICALLY EASIER TO CONTROL
At last, a 10-in. radial saw so incredibly easy to control set up. Controls are grouped by function making them easier to read and set. The trigger-actuated "Control Cut" system controls feed rate to ensure accuracy. No more costly mis-cuts.

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Solid cast-iron body with solid cast-iron extension wings provide a large supporting workspace

ROOM TO GROW!
Our largest capacity 10-in. table saw has a 30-in. right and 24-in. left self-aligning rip fence. Controls are easier to reach and adjust. Expect accurate rips every time.

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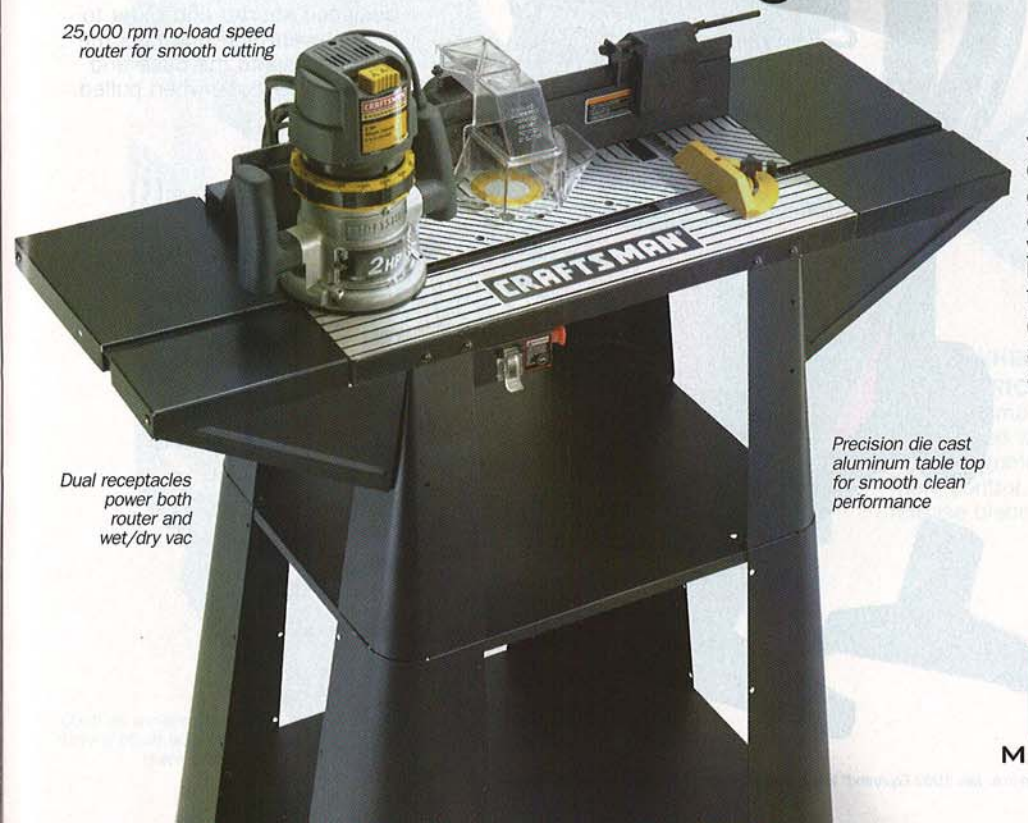

25,000 rpm no-load speed router for smooth cutting

Dual receptacles power both router and wet/dry vac

Precision die cast aluminum table top for smooth clean performance

YOU'RE IN TOTAL CONTROL!
Craftsman router table with extensions provides over 570 sq. in. of smooth surface that won't scratch your work. A multi-functional fence has a clear guard and special jointer fence for cutting straight edges.

Craftsman 2-HP router is powered by a 9-amp motor. Depth of cut can be adjusted from 0 to 1 1/2-in.

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When Craftsman tools were first introduced, the goal was to make the most dependable, innovative yet affordable tools ever made. 70 years later, we've never stepped back off that lofty goal.

Craftsman® 24-in. scroll saw with a two-speed motor is ideal for intricate high-speed cutting. Capacity is greater than ever. Cuts up to 1 3/8-in. deep at 45° and 2-in. deep at 90°. Perfect for your more complex and larger-sized projects.

Our **Craftsman low profile vac** breaks the mold for wet/dry vacs. It has a wider, shorter design that is dramatically more stable, helping to put an end to accidental tipovers.

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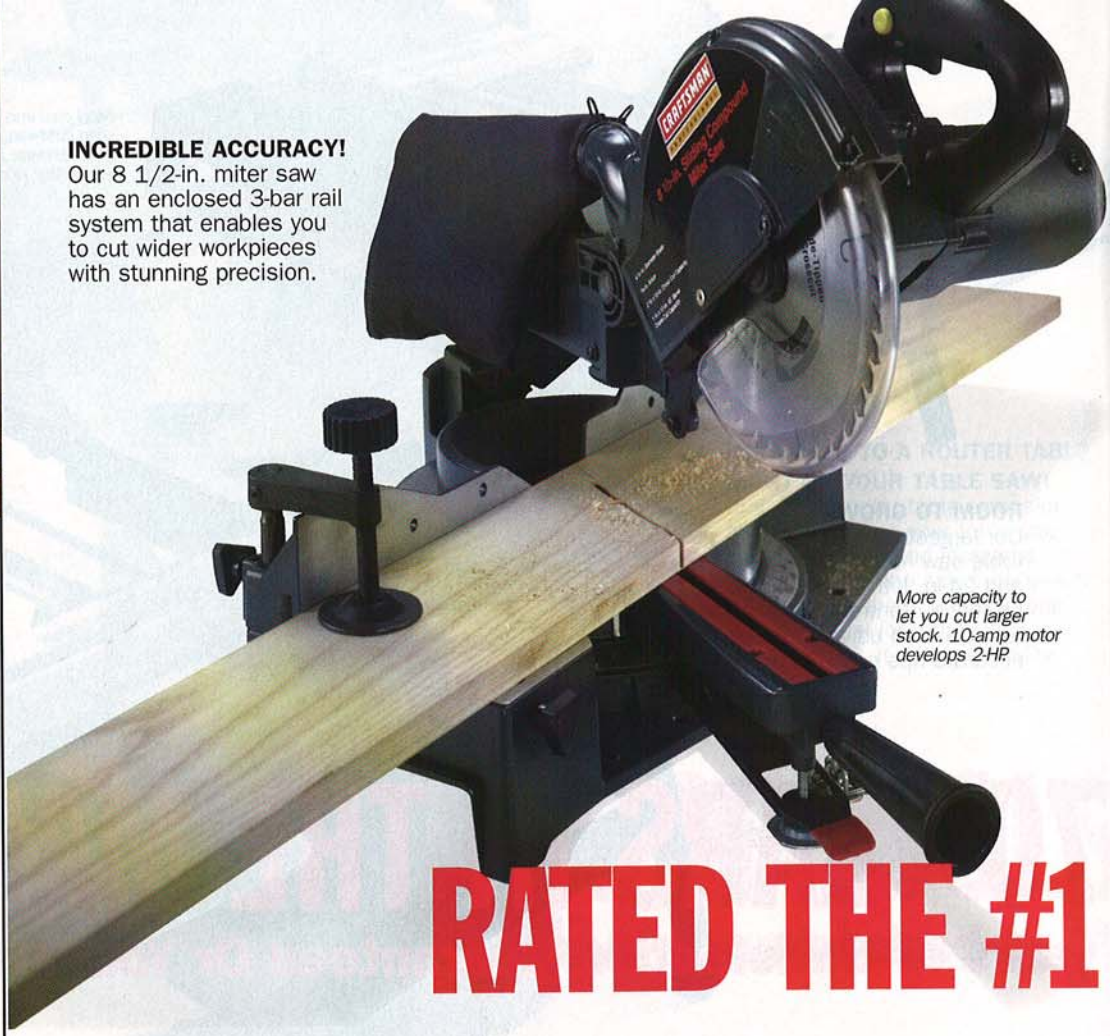
INCREDIBLE ACCURACY! Our 8 1/2-in. miter saw has an enclosed 3-bar rail system that enables you to cut wider workpieces with stunning precision.



More capacity to let you cut larger stock. 10-amp motor develops 2-HP.

RATED THE #1

NO TIPPING ALLOWED! Craftsman low profile 16-gallon wet/dry vac is designed shorter and wider to help prevent tipovers. Plus the hose locks into the base and won't come loose when pulled.

Detachable blower for powerful lawn and garage cleanup

The drain port is designed lower for more thorough draining

*Source: Jan. 1999 Equitrend® Brand Survey conducted by Total Research® Corporation.

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Controls are easy to read, making blade adjustments quick and easy.

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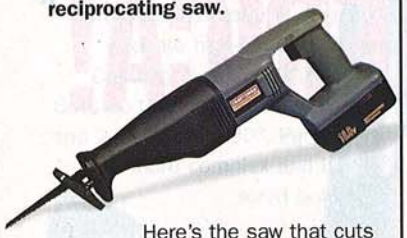
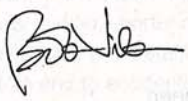
You'd think that after designing and producing one of the best reciprocating saws in America, the Craftsman tool designers would sit back and relax. Not a chance! They immediately went to work and have developed the very first

Craftsman® 18V cordless reciprocating saw.



Here's the saw that cuts down the cordless barrier. It packs 18-volts of effective 0-2500 spm variable-speed power with a 1-in. cutting stroke...all without the need for a cord. It comes with two 2.0Ah battery packs and a charger to keep you with continuous power. The pivoting shoe helps you cut at any angle. Put it all together and you have the perfect saw for both home and off-site projects.



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Carbide tipped blade with a 1 9/16-in. cutting depth

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Work fast and effectively with a larger 14 sq. in. sanding surface

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CHAMFER BITS

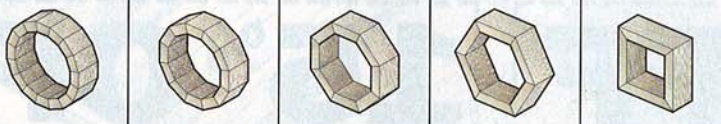
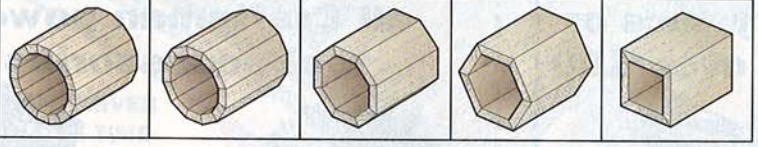
A great way to make on-the-money miters

We all know that chamfer bits work great for easing exposed edges. But did you know that with them you can cut dead-on miters with little setup involved? Here's how.

As you can see in the chart *below,* chamfer bits come in five cutter angles for making boxes with various numbers of sides. Note that the 45° bit we show is considerably larger than the other chamfer bits. That's because we prefer to use bits capable of making a full-edge cut in ¾"-thick stock. For such material you need to move up to the largest 45° bits generally available—those with a cutting diameter of 2½" or more.

Note also in the chart that there are two kinds of miter cuts you can make with chamfer bits: end-grain miters (for shallow boxes or frames), and edge-grain miters (for deeper boxes). In the steps that follow we'll make both types of miter cuts with a table-mounted router.

5 CHAMFER BITS AND THE MITERS THEY CUT

ROUTER BIT (SHOWN AT ONE-FOURTH OF ACTUAL SIZE)					
CUTTER ANGLE	11.25°	15°	22.5°	30°	45°
NUMBER OF SIDES IN BOX	16	12	8	6	4
END-TO-END JOINED WORKPIECES					
EDGE-TO-EDGE JOINED WORKPIECES					

How to miter end-to-end joined workpieces

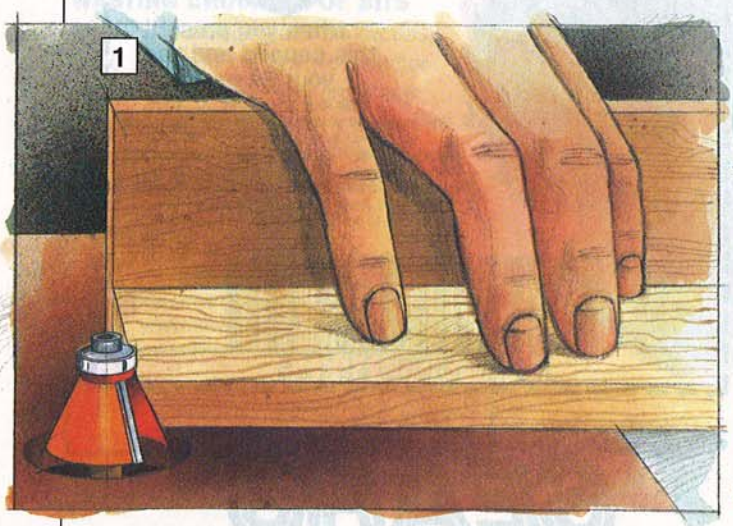
First, install the chamfer bit and adjust its height so the bottoms of its cutting edges are just below table level. Then, set your router table's miter gauge precisely 90° to its miter slot. Add a wood auxiliary face to the miter gauge that extends up to, but just a hair shy of, the chamfer bit's pilot bearing.

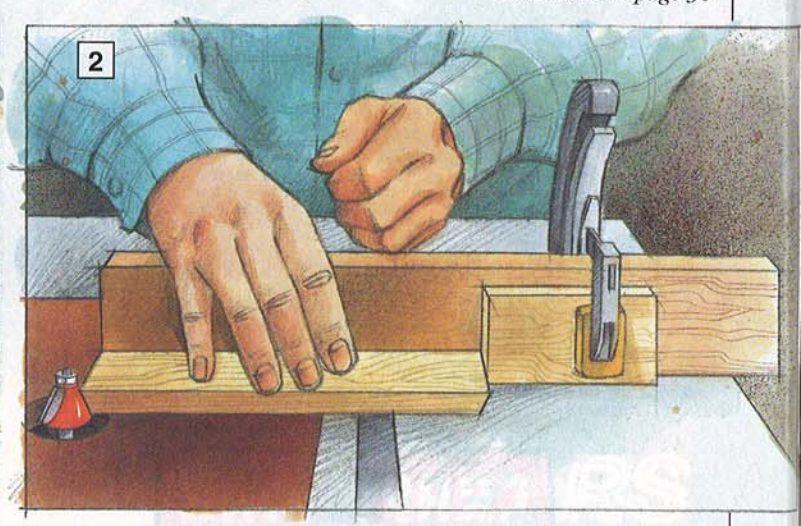
Note: *Perform each of the following steps on all of your workpieces before moving onto the next step.*

1 Rip your stock to exact width and crosscut your workpieces about ⅛" too long. Miter one end as shown *below left.* For best control make multiple shallow cuts until the bit miters the entire end.

2 Cut a full miter on the opposite end, leaving each workpiece about 1/16" too long. Now, miter one workpiece to its final length. Then, use this workpiece to set a stopblock on the miter-gauge auxiliary fence. Cut all of the pieces as shown *below.*

Continued on page 36





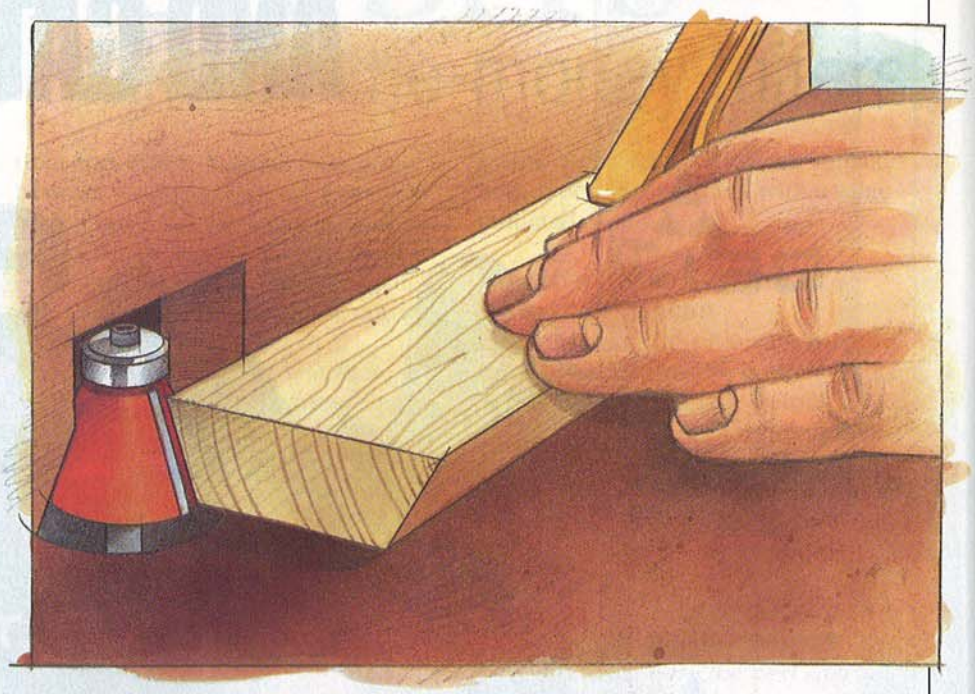
Continued from page 34

CHAMFER BITS

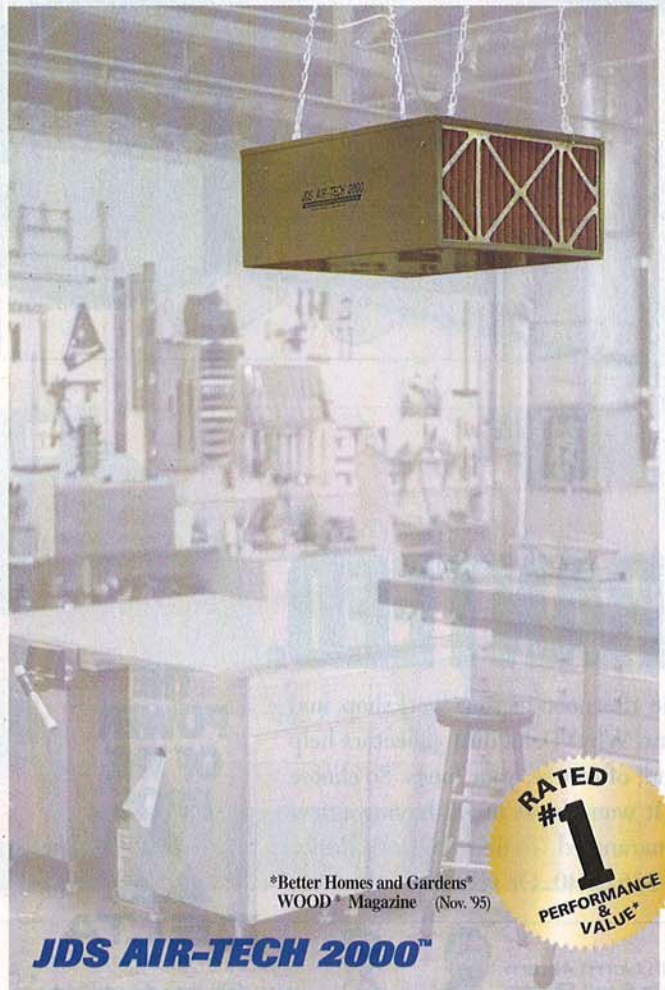
Now, let's cut miters for edge-to-edge project pieces

1 Rip and crosscut all of your workpieces to their finished width and length. Adjust the chamfer bit for a full-height cut and position your router table's fence for a shallow cut. Make this cut on both edges of all of the workpieces. Move the fence back for a slightly deeper cut and repeat, doing this until your miter cuts on both edges come to within about ⅛" of the top of each workpiece.

2 Adjust the fence so the chamfer bit cuts the full miter without reducing the workpiece's width. (For precise results, make test cuts in scrap stock.) Make your final miter cuts on both edges as shown at *right*.



Written by Bill Krier with Jan Svec
Illustrations: Kim Downing
Photographs: Doug Hetherington



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This issue's proud Top Shop Tip winner, Mervin Swartzentruber, shows off the mammoth computer desk he built for his home.

After 40-plus years of woodworking weekends, Mervin Swartzentruber recently gave up his garage-sized shop for good. But our Top Shop Tip winner didn't have to stop woodworking when he and his wife Marilyn moved to a retirement community in Goshen, Indiana.

Now, instead of a small private shop, Mervin crafts everything from toys to china cabinets in the workshop he shares with about a dozen other retirees in the community. "It was the only way Marilyn could get me to move here," he says with a grin.

Whether you own it or just work in one, your shop is full of tips you can share with other woodworkers. Send a tip to us, along with a photo or sketch and your daytime phone number. If we publish it, you'll find an extra $75 in your pocket. And, if you really wow us, you could be named our Top Shop Tip winner and pick up a dandy tool prize worth at least $250. Our address:

Tips From Your Shop (and Ours)
***WOOD*® Magazine**
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We try to publish original shop tips, so please send your ideas only to *WOOD* magazine. Sorry, but we can't return submissions. Thanks!

Dave Campbell
GENERAL-INTEREST EDITOR

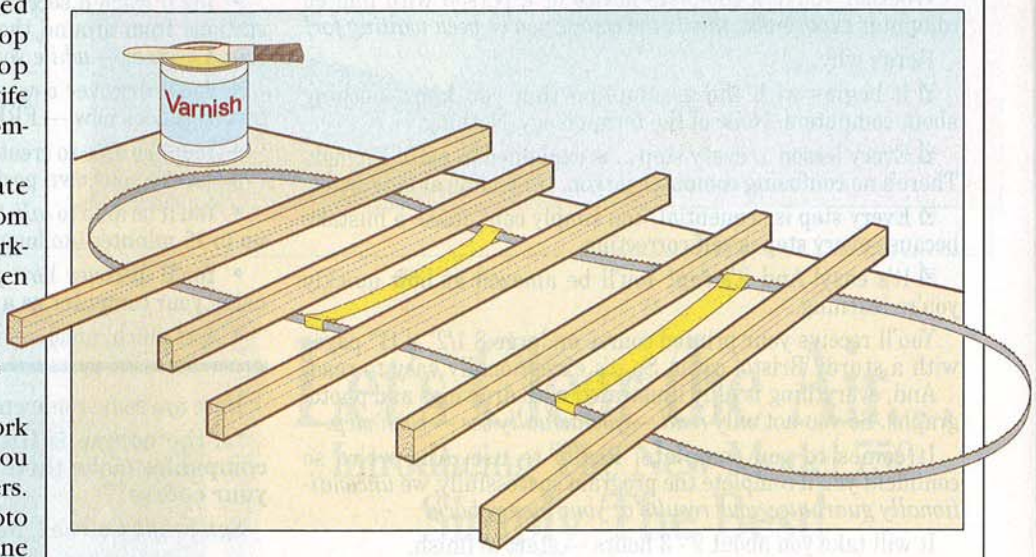
Old bandsaw blade finds second career in finishing

TOP SHOP TIP

Instead of laying your projects on a bed of nails while the finish dries, grab an old bandsaw blade and place it, teeth up, on your benchtop. Pull the blade into an oblong shape and hold it there with fine wire or tape, as shown *below*. Now rest your project or workpieces on the blade and apply the finish, without fear of marring the bottom. I've found that blades at least ½" wide work best, and the fewer teeth-per-inch the blade has, the better.

—Mervin Swartzentruber, Goshen, Ind.

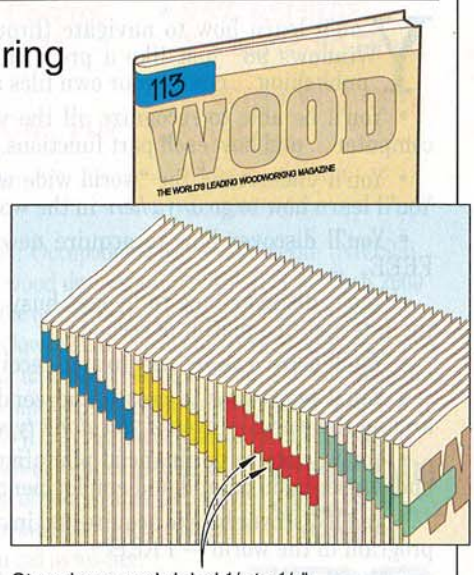
This issue's Top Shop Tip winner will get a grip with $250 worth of QuickGrip QuickChange clamps courtesy of American Tool Companies! Marvelous, Mervin!



This guy has some staggering issues to deal with

Bill Wallis' tip in the Winter 1998 issue of *WOOD* magazine caught my eye because for years I've used a similar method for keeping my magazines in order. However, instead of placing the colored adhesive labels at the same level on the spine of the magazine, I step each label down a bit for each subsequent issue. Then I start again at the top with a new color at the beginning of each year. The larger gap between labels shows me where the borrowed magazine goes, without ever looking at the month or issue number.

—Martin J. Wiegler, Toms River, N.J.



Step down each label 1/8 to 1/4".

Continued on page 40

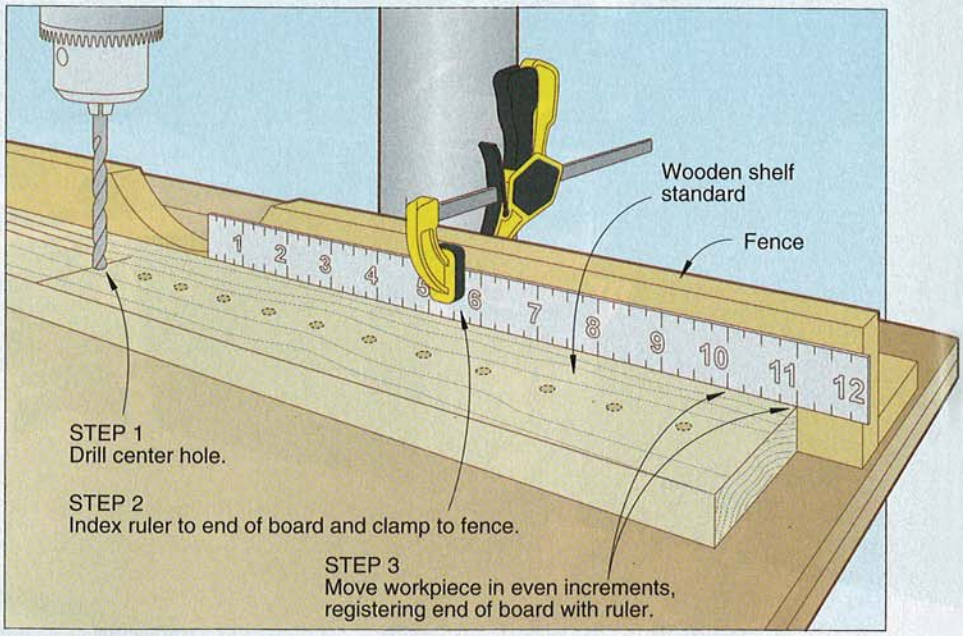
Continued from page 38

A quick and accurate way to drill evenly spaced holes

For the shelf standards in the tablesaw accessory cabinet on *page 64*, you need to drill evenly spaced holes. If you have a ruler at least half as long as your workpiece, you can do it accurately without a lick of math. Here's how:

First, measure, mark, and bore the standard's center hole with your drill press. (If you need an even number of holes, locate and bore one of the two holes closest to the center.) Keeping the bit in the hole and the shelf standard against the fence, clamp a ruler to the fence so that the end of the standard lines up with an easy to remember increment—for example, the 11" mark, as shown in the drawing at *right*.

Now, raise the drill bit and move your workpiece so the end lines up with the next spaced increment (for 1" spacing, slide the workpiece to the 10" mark; for ½" spacing, shift it to 10½"), and bore the next hole.


Wooden shelf standard
Fence
STEP 1
Drill center hole.
STEP 2
Index ruler to end of board and clamp to fence.
STEP 3
Move workpiece in even increments, registering end of board with ruler.

Continue to the next increment, drill again, and so on, until you reach the end of the workpiece. Turn the standard end for end, and repeat the process, starting again with the center hole.

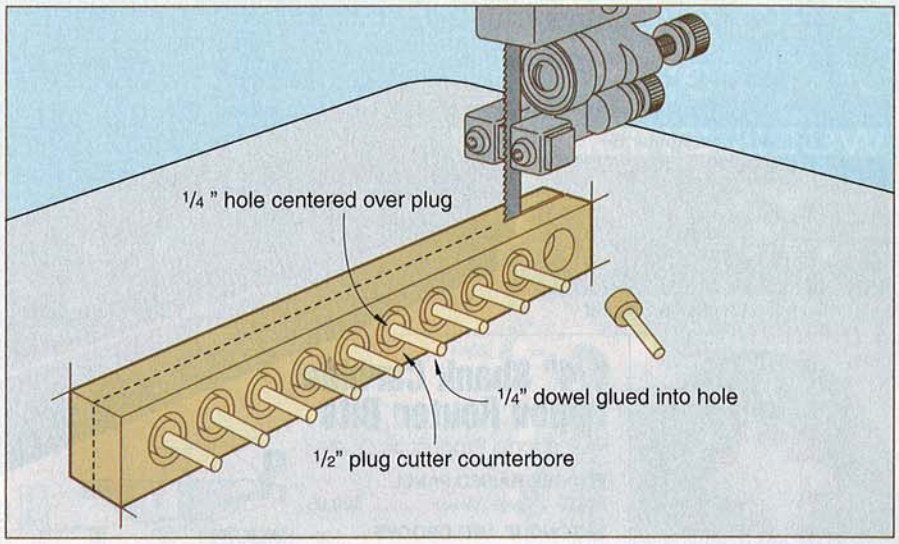
—Chuck Hedlund,
WOOD® magazine shop manager

Plug cutter makes matching pinheads

When I need the heads of axle pins or pivot pins to match my project, I make them with my plug cutter. From the same stock as my project, I shape plugs that are slightly larger diameter than the finished pinheads, without cutting completely through the stock. Then, I drill shallow holes in the approximate center of the plugs and glue the axles or dowels into them.

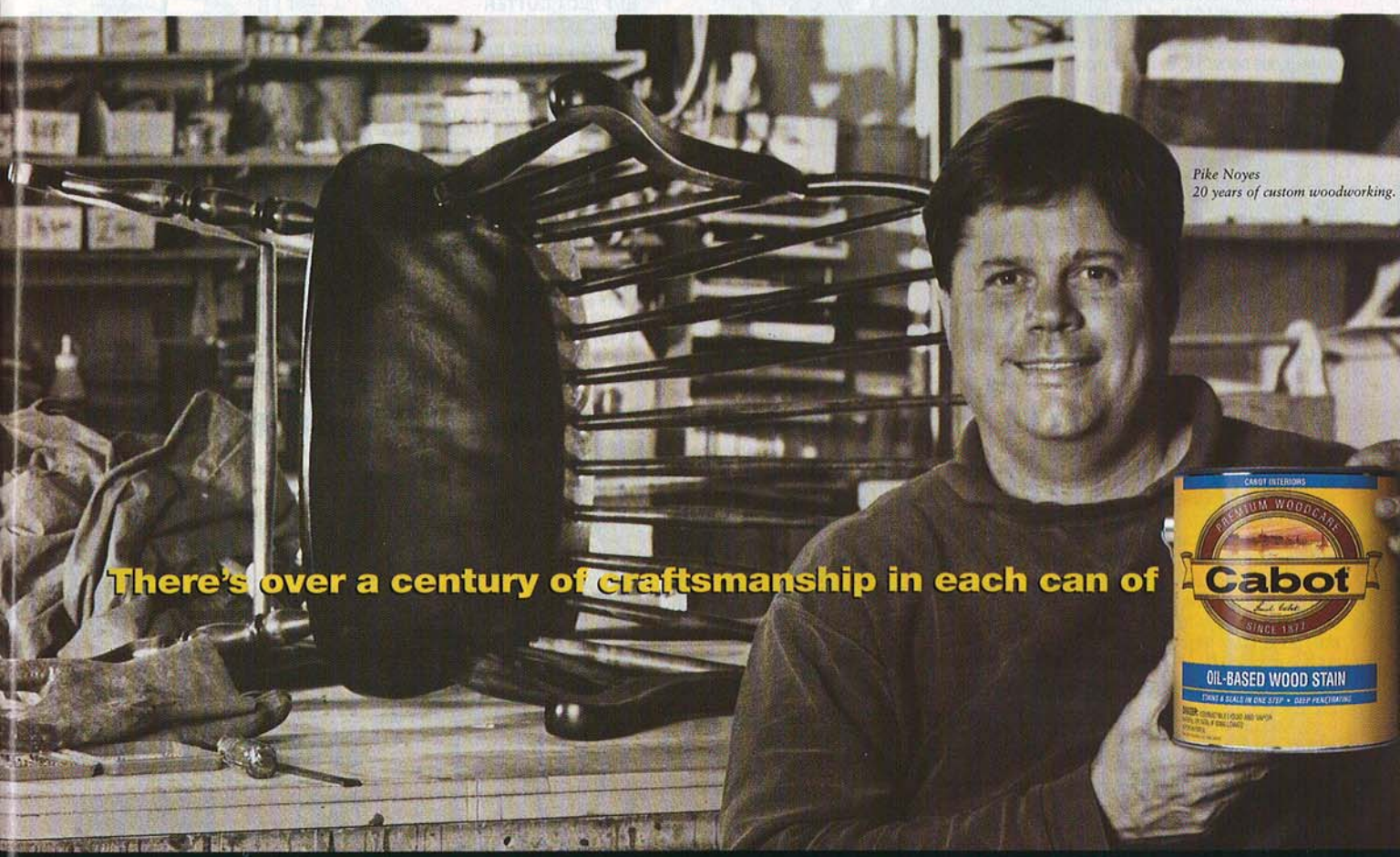
After the glue sets, I cut the plugs free on my bandsaw as shown *below*. I chuck each dowel into my drill press and form the heads to any shape or size with sandpaper.

—Jim Gailey, Muskogee, Okla.



A FEW MORE TIPS FROM OUR WOODWORKING PROS

- Wondering how you can put a brushed, polished, hammered, or patina finish on brass? See the metalworking article on *page 43*.
- In the tabletop lamp project on *page 59*, we show how to hide the electrical cord in one of the uprights to keep the look of the lamp base clean.
- If you're frustrated by tools slip-sliding away everytime you open a drawer, see how we solved the problem in the tablesaw accessory cabinet, starting on *page 62*.
- You don't need special steam-bending equipment to make strong curved pieces. See *page 72* to learn how we laminated thin wooden strips to form the gracefully curved runners on the sleigh coffee table.



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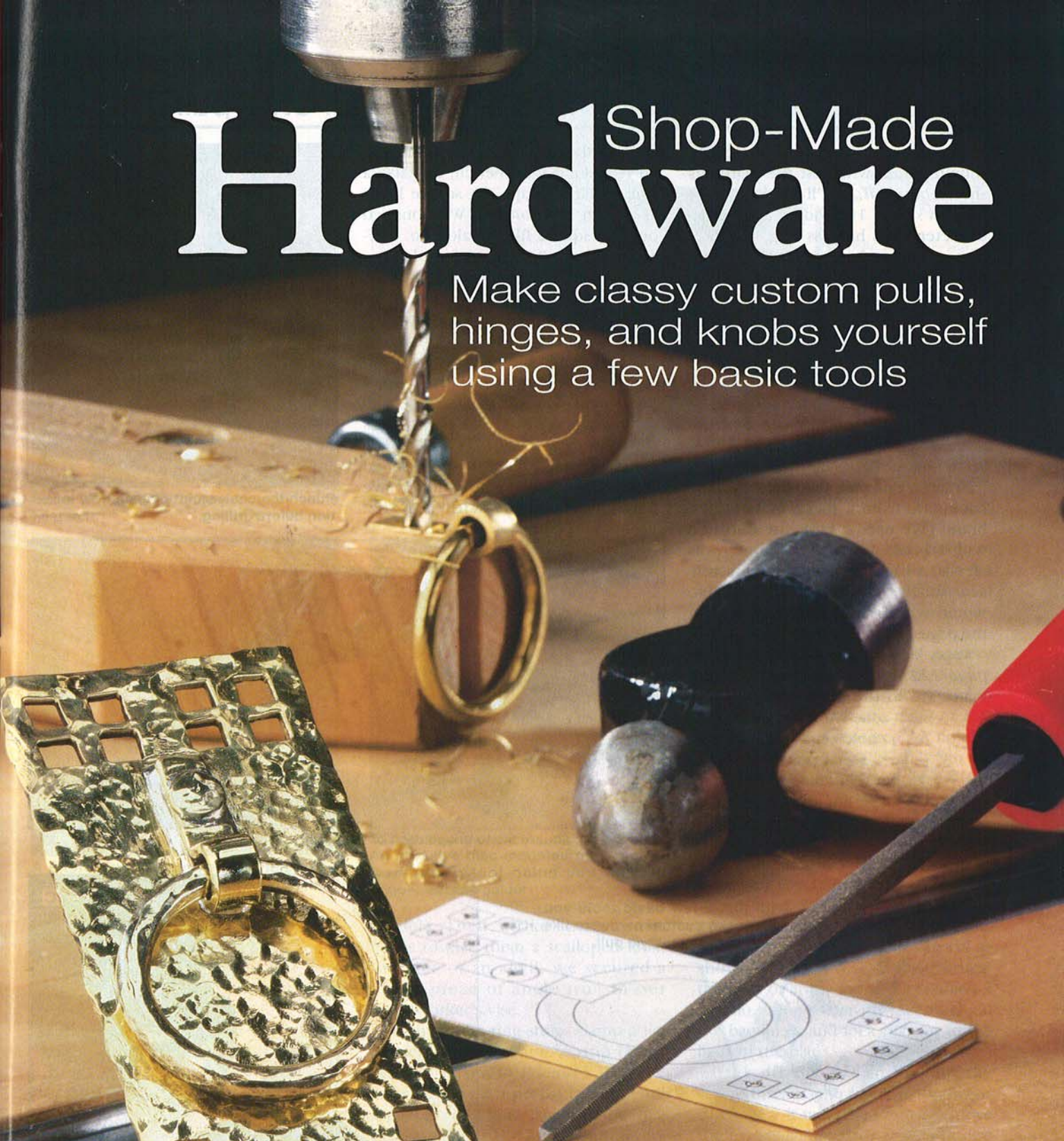
Shop-Made Hardware

Make classy custom pulls, hinges, and knobs yourself using a few basic tools



Did you know that you can make unique, eye-popping hardware using basic skills, a few simple tools, and common materials available at hardware stores? It just takes some imagination (we'll get you started in that department) and a little elbow grease. Here's what you need to know.

Continued

Mission possible: How to make a craftsman-style pull

You can make the classic beauty shown *below* with just the materials shown *beside it*. You'll need 1/16"-thick brass in 1/4" and 1 1/2" widths, a 1" inside-diameter brass harness ring, #8-32×2" brass roundhead screw, #8-32 hex nut, and #18×1/2" brass escutcheon pin. Total cost: about $2.30.

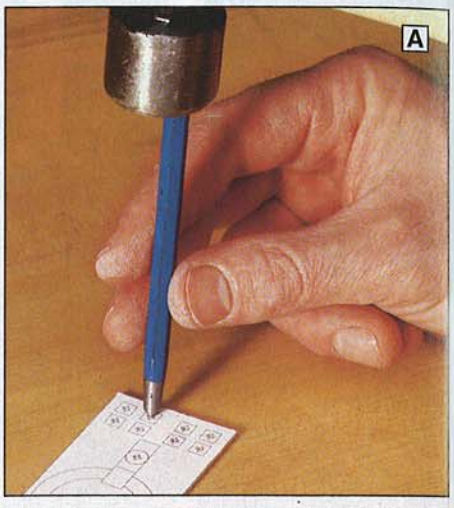
Many hardware stores carry all of these supplies, although you may have to go to a hobby store to find the brass plate. For a dealer near you, call the manufacturer, K&S Engineering, at 773/586-8503, or buy direct from Special Shapes, 800/517-4273, www.specialshapes.com.

To make this pull, first cut a 1 1/2×3 1/4" backplate from a piece of 1/16"-thick brass. (We used a tablesaw outfitted with a blade designed for nonferrous metals. A hacksaw, bandsaw, or scrollsaw with 3/0 jewelers blade also would work.) Straighten and smooth the edges with a flat file.

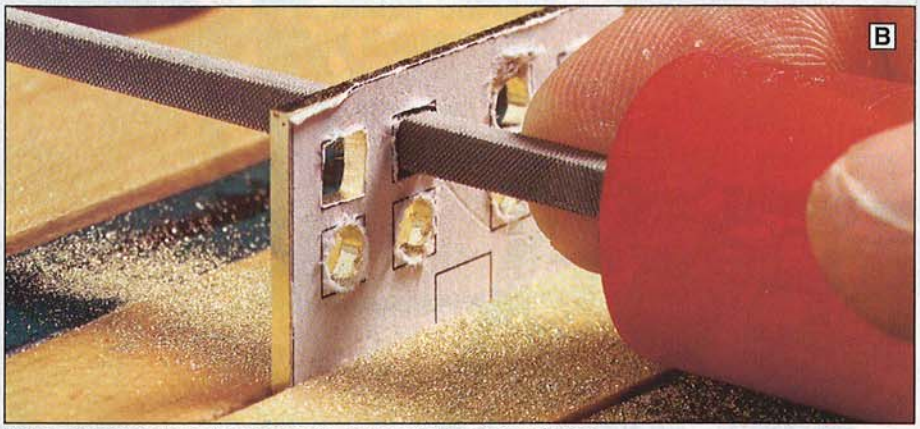
Apply one of the patterns found on *page 122* insert in the center of the magazine to the plate using a spray adhesive. Strike each of the hole centerpoints with a metal punch as shown in *Photo A*. Drill holes of the sizes noted on the pattern.

Secure the backplate in a vise mounted to a solid workbench, and use a square file to shape the square holes as shown in *Photo B*. (We obtained our 5/32" square file, catalog no. APF-16584, from Reid Tool Supply Co., www.reidtool.com, 800/253-0421, $5.35 plus shipping.) Squaring all 14 holes took us about 30 minutes, so find a comfortable sitting position.

If you would like a hammered surface like the one on our pull, use a permanent pen to mark the approximate location of the strap that holds the ring (see *Photo C*). Strike the entire surface, except for the marked area, with a ball peen hammer (we had good success with a 12-oz.

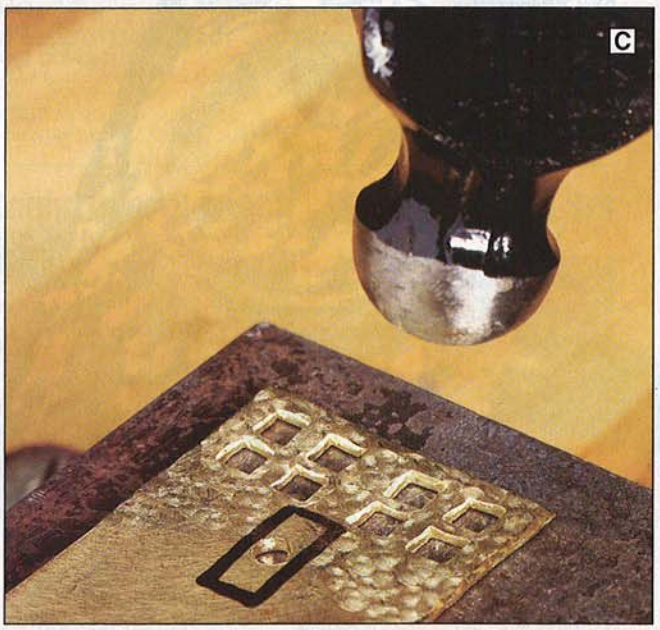


Punch the centerpoint of each hole location before drilling.

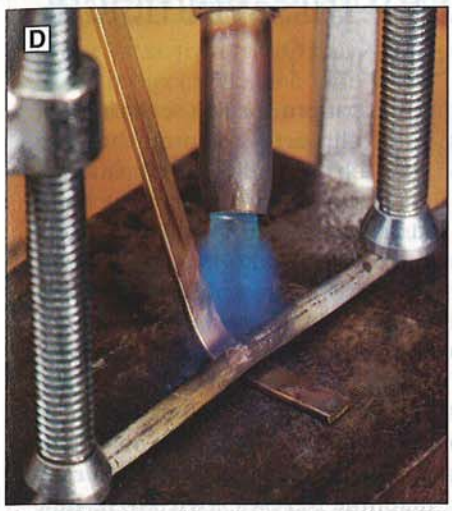


Use a small square file to shape each of the square holes.

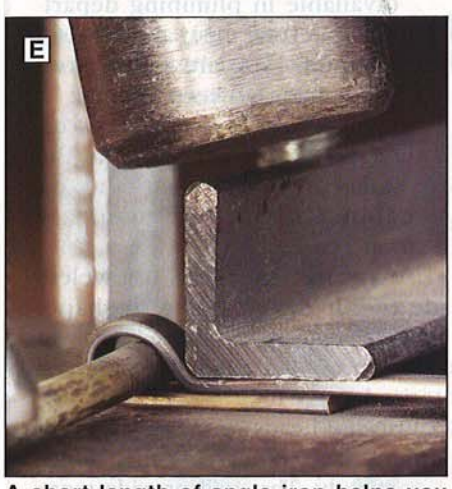
With just a few basic tools you can make custom hardware like this craftsman-style pull.



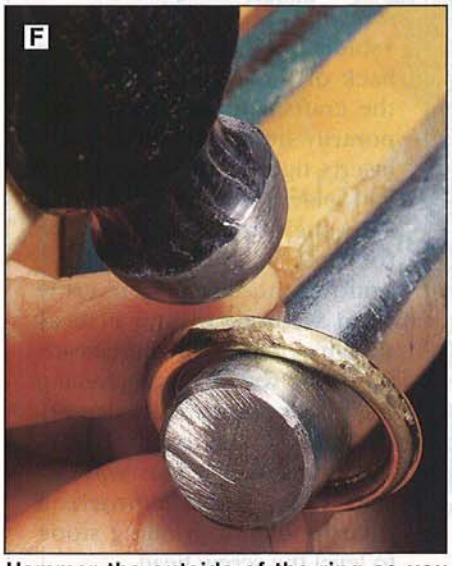
Hammer all of the backplate surface except where the ring strap will be soldered in place.



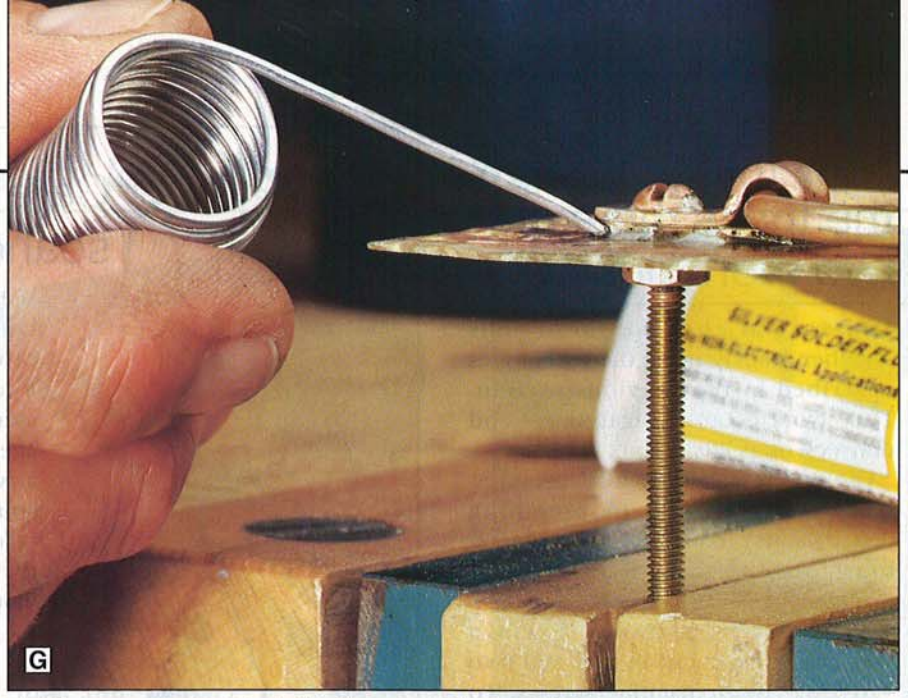
Brass bends easily once you apply some heat to it.



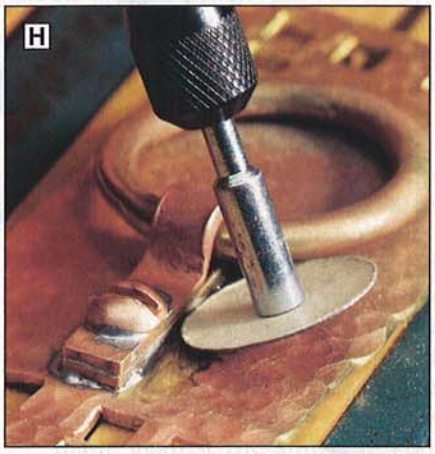
A short length of angle iron helps you pound a crisp bend into the ring strap.



Hammer the outside of the ring as you rotate it on a steel rod secured in a vise.



Touch some silver solder to the fluxed and heated joints to secure them.



An abrasive disc mounted on a motorized rotary tool helps you quickly remove excess solder.

model). Then, strike all along the edges to give them a scalloped look. In place of an anvil, we secured a heavy piece of angle iron in our woodworker's vise.

To shape the ring strap, clamp a ¼"-diameter steel rod atop a strip of 1/16" brass as shown in *Photo D*. Heat the brass strip with a propane torch until it glows red, grip its far end with a pliers, and bend the strip completely over the rod. Reheat the brass if necessary, and use an angle iron and hammer to pound a sharp bend into the strap as shown in *Photo E*. Cut off the excess length of brass strip with a hacksaw, and file the ends smooth.

To complete the hammered look, slip the harness ring over a length of steel rod secured in a vise as shown in *Photo F*. Peen the outside surface of the ring; then move the ring to a flat iron surface and hammer as much of its inside surface as possible.

Pry open the brass strap enough to slip the ring into place, and squeeze the strap shut with a pliers. Secure the strap in a handscrew clamp as shown on the *opening page of this article* and drill a centered 5/32" hole.

Attach the strap/ring assembly to the backplate with the brass screw and nut. Tighten the nut so the strap compresses completely. Secure the threaded end of the screw in a vise and apply silver solder flux to the joints between the backplate, strap, and screw head. Heat these joints with a propane torch until silver solder melts when you touch it to the brass as shown in *Photo G*. Do not overheat the joint or apply too much solder—if you do, some solder may seep behind the backplate and lock the nut to the back of the plate.

Back off the nut and clamp the screw threads in a vise. (If the nut is stuck, heat it with the torch.) Remove the excess solder with a sanding disc attached to a motorized rotary tool as shown in *Photo H*.

File down the screw head until you remove its slot. Do not hammer this surface or the ring strap—doing so may break the soldered joints. For help in deciding what finish to put on the pull, see the section "Four fantastic finishes" at the end of this article.

Continued

Now that you know the tricks, here are two more pulls

You can put either of these pulls together quickly using the techniques described in the previous section. They work great on small doors and drawers, or as lifts on box lids.

The ring pull features a ⅝" compression sleeve (found in plumbing departments) mounted to a 1/16×⅞×2" brass plate with a #8-32×2" brass machine screw. Cost: about $1 each.

We made the half-circle pull with a ½" brass washer cut in half and two #10-32×2" brass machine screws. To expand the screw slot to fit the washer we used a small flat file. Total cost: about $1.10 each.

Ring pull

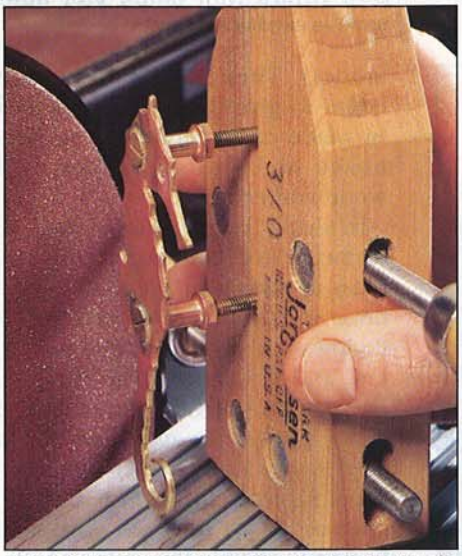
Half-circle pull

Care to try this whimsical seahorse pull?

We found the pattern for this seahorse in a collection of clip art—a source that can provide you, too, with all sorts of patterns. You'll find paper clip-art patterns at book stores and art stores, and in software packages available at computer suppliers. Such artwork covers everything from animals to sports symbols to holiday ornamentation.

To make the seahorse, you'll use many of the same techniques described on the previous two pages for the craftsman-style pull. As shown at *left*, you will need 1/16" brass plate, two #8-32×2" flat head brass machine screws, two #8-32 hex nuts, and two ⅜" brass inserts (available in plumbing departments). Total cost: about $2.60 per pull. Here are a few more handy things to keep in mind:

- We provide two patterns on *page 122* so you can mount the seahorses to face each other on cabinet doors that swing in toward each other.
- Use a scrollsaw and 3/0 jewelers blade to cut the seahorse to shape. Scallop its edges in the shaded areas on the pattern using a grinding wheel in a motorized rotary tool.
- Because the heads of the screws will be ground flat, countersink their holes slightly. That will provide more contact surface for the solder between the brass plate and the screw head.
- Solder the brass insets to the back of the seahorse. As with the craftsman pull, a nut temporarily holds the screws and inserts tight to the seahorse as you solder them in place.
- File the screw heads as close to flush as possible. Then, remove the last bit of screw head with a sanding disc as shown at *left*. Sanding the heads flush this way without gouging the plate requires some dexterity, and you may not feel comfortable doing it this way. In that case, use a motorized rotary tool and grinding stone to level the screw head.



After filing the screw heads nearly flush, you can sand them flush with a disc sander. Use a gentle touch!

These distinctly different knobs go together in no time

Your next jewelry box or similarly sized project will shine with knobs like these. You can assemble either for less than $1 each.

To make the teardrop knob, insert a #8-32×2" steel machine screw through a ¼" flare nut (a plumbing fitting), secure the screw tight to the flare nut with a steel hex nut and washer, and mount this assembly in a drill press as shown at *far right*. For a steady rest, secure a ½" hexhead bolt, 8" long, to the drill-press table. Adjust the drill press for its slowest speed and shape the flange with a coarse file. Switch to a fine-cut file for the final smoothing.

Quick tip: *Apply bee's wax to files to help prevent them from loading with metal debris.*

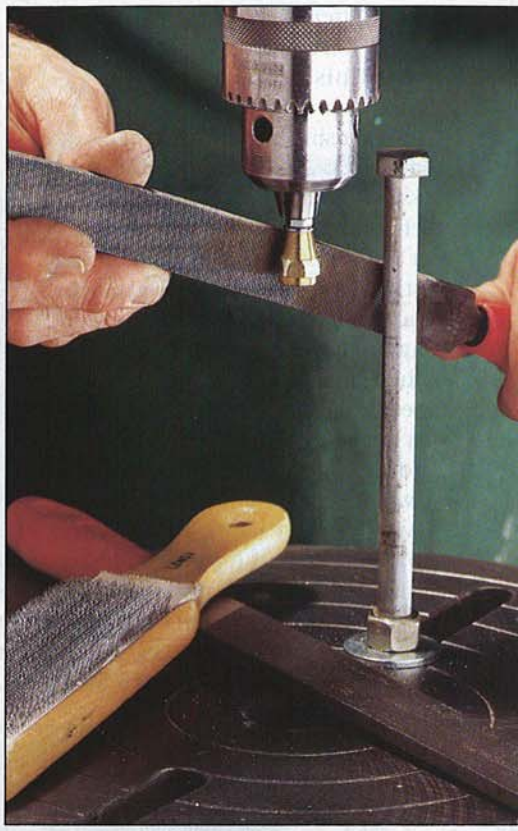
Teardrop knob

Remove the steel screw and nut and replace them with a brass screw and nut. Stand this assembly upright in a vise and pour pigmented epoxy into the flare nut. Sand the cured epoxy flush with the lip of the flare nut.

To make the round knob, drill a 5/32" hole centered on the end of a ½" copper pipe cap. Insert a #10-32×2" steel machine screw through the hole with its head inside the cap. Secure the screw with a hex nut and chuck this assembly in your drill press. Set the drill press for its lowest speed setting and cut the cap to about half of its original length by holding a hacksaw blade against the spinning cap. Smooth the cut edge with files or sandpaper.

Remove the steel screw and nut and replace them with a #10-32×2" flat head brass machine screw and #10-32 brass knurled nut. Cut a ⅜" walnut plug slightly longer than the cap and secure it inside the cap with epoxy. After the epoxy cures, cut off the plug flush with the copper cap and sand smooth.

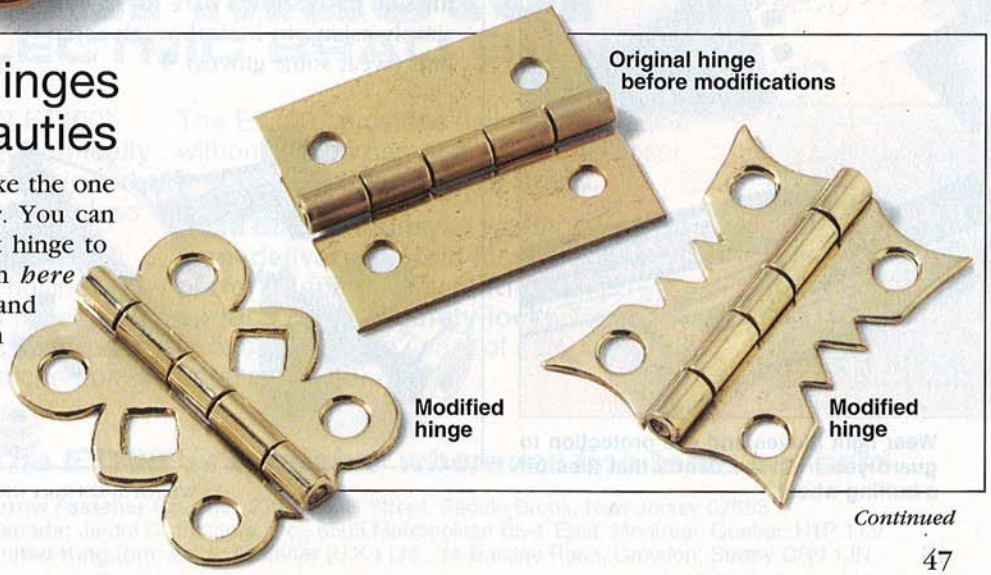
Round knob



Keep a file card handy to clean away the brass as it clogs the files.

Turn plain-Jane hinges into sparkling beauties

Ordinary 1½×1¼" brass hinges like the one at *right* cost about $2 for a pair. You can easily modify such a nondescript hinge to look like the other two shown *here* with just a little sawing, filing, and polishing. Use the patterns on *page 122*, or design some to your own liking.



Original hinge before modifications

Modified hinge

Modified hinge

Continued

Four fantastic finishes

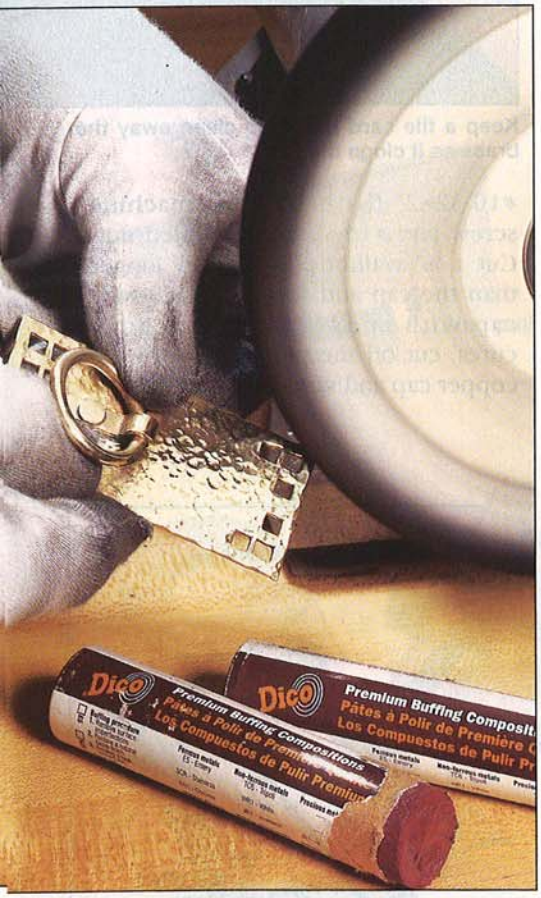
The pulls at ***right*** show four different ways to give your hardware a distinctive finish. The polished pulls were buffed to a high luster using a buffing wheel mounted on a bench grinder as shown *below*. We first charged the buffing wheel with a Tripoli compound (available in sticks from hardware stores) by holding the wax-like compound against the spinning wheel. We then buffed the entire surface. (To reach tight spots we used a buffing wheel attachment on a motorized rotary tool.) Next, we cleaned the wheel by holding a piece of scrap wood against the spinning wheel. We buffed the pull to its final luster with jewelers' rouge compound.

We treated the green pull with Patina Green (item PG8, $11.75 for 8 oz., or item PG16, $20.45 for 16 oz., plus shipping, from Constantine's, 800/223-8087). You also can buy the same product in a formulation that leaves a blue patina.

To achieve the brushed look we sanded the surface with 400-grit wet/dry silicon carbide abrasive paper. Sand with straight back-and-forth strokes in one direction only.

These pulls will scratch or tarnish if left unprotected, so we coated them with Staybrite (item SL150, $13.25 for a 12 oz. spray can, plus shipping, from Constantine's, 800/223-8087). This finish is especially formulated for brass and copper.

You can use any clear finish over the green or blue patina, but keep in mind that the finish will darken the patina as it did on our sample *above*. Experiment on scrap brass before deciding to coat a patina.

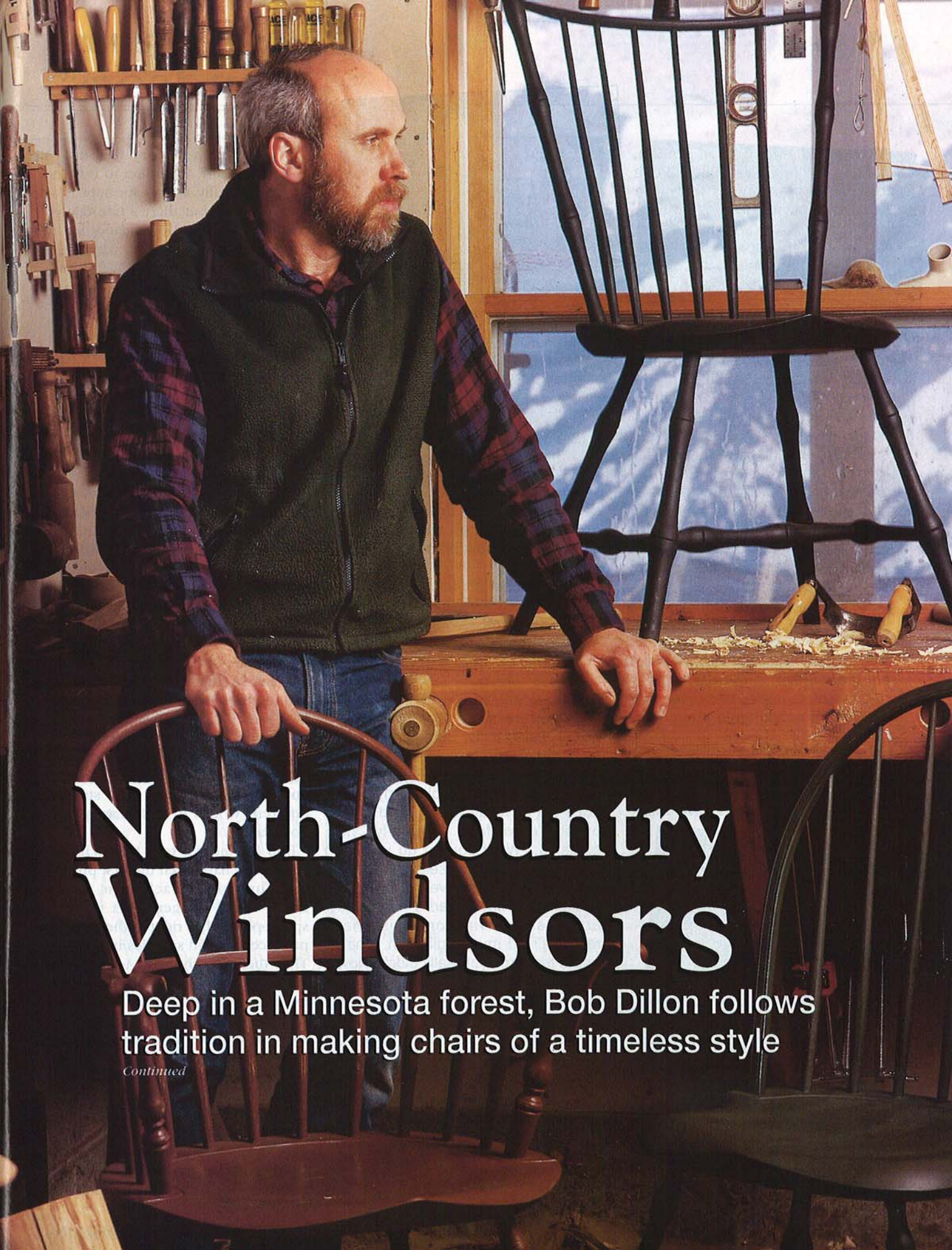


Wear light gloves and eye protection to guard you from the debris that flies off a buffing wheel.

How to get your hands on low-cost brass and aluminum

You can find a bounty of dirt-cheap brass and aluminum at salvage yards and shops that repair truck and car transmissions, rear differentials, and brakes. Once these parts have outlived their original purpose, their scrap value is minimal; we got most of the brake and transmission parts shown *here* for free by simply asking to look through scrap bins (wear some gloves).

Written by Bill Krier with Jan Svec Photographs: Marty Baldwin

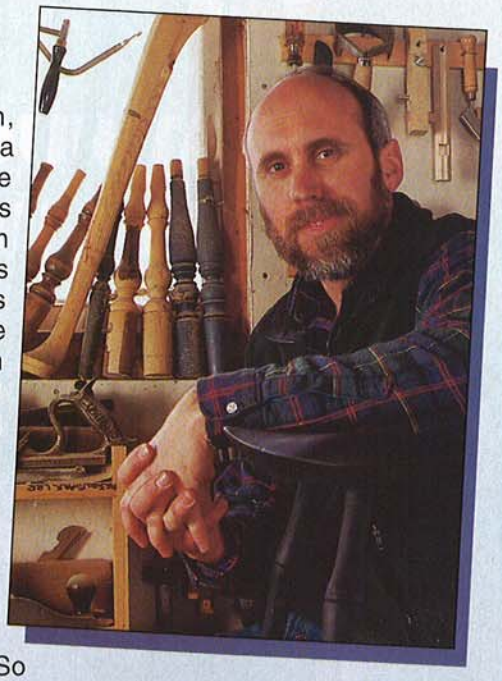


North-Country Windsors

Deep in a Minnesota forest, Bob Dillon follows tradition in making chairs of a timeless style

Continued

North-Country Windsors



Born and raised near Boston, Bob Dillon, 44, lives the life of a lone craftsman on his five-acre wooded homestead a dozen miles from Hackensack, Minnesota. In the basement workshop of his hand-built home, he creates chairs in a style that dates back more than 300 years and sells them throughout the Midwest. How did a New Englander end up making traditional Windsor chairs in the wilds of northern Minnesota?

"I was a forestry major at the University of Massachusetts," Bob begins his story. "I spent a couple summers working for the U.S. Forest Service near Grand Marais, Minnesota, and liked it. So after graduation, I became a full-time forester for them in Walker, just a few miles from here. But after three years, the government bureaucracy started getting to me."

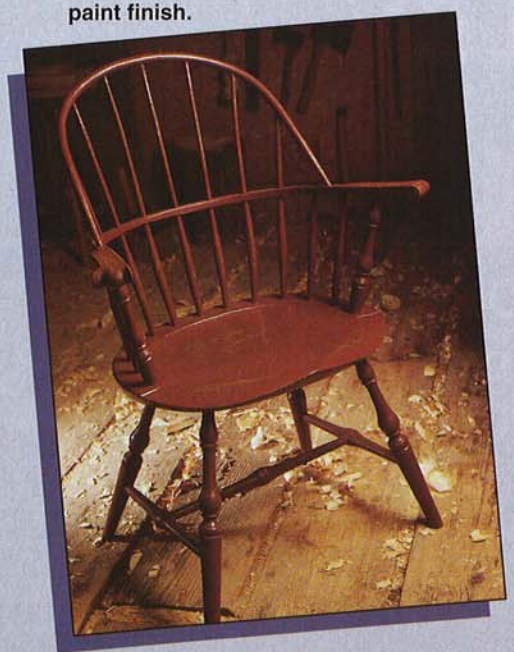
Accordingly, Bob quit his forestry job in 1980. At the time, the young man had no idea that his future would lie in woodworking, although his grandfather, great grandfather, and two great uncles had made their livelihoods as carpenters and cabinetmakers. In fact, Bob had inherited many of their hand tools, although he knew little about their use.

"For a number of years, I worked in a shop in Hackensack that made oak pool cue racks," Bob continues. "But I knew that couldn't go on forever, so I started looking at what else I could possibly do."

Then skilled in the use of tablesaws, routers, and other power woodworking tools, Bob started plotting a future course that would put him on his own. "I didn't have any power woodworking tools of my own, but I did have all those hand tools passed down from my family," he explains. "What could I do with all the saws, planes, chisels, and other tools that had been given to me?

"Well, one day I read a magazine article about Windsor chairs that really stirred my imagination. I had heard the term, yet really didn't know what they were," he recalls. "What I read of their history was interesting, but what really caught my eye was that the guys making them were using mostly hand tools. Right away I thought that making Windsors with basically what I had would be great fun. After that, I bought a book by well-known Windsor chairmaker Michael Dunbar, read it, plowed right in, and never stopped. That was nine years ago."

This curved-back Windsor, called a bowback, is one of Bob's most popular chairs. With a seat measuring 17×21" and plain "paddle" arms, it sells for about $350. All his chairs have a milk paint finish.



What's the story behind a Windsor? According to Bob, no one really knows for sure how they evolved, but there's one tale he particularly likes. "In England during the 1600s, the king and his party were out and about the countryside when it began to storm. His aid, wanting to get shelter for the king, knocked on a commoner's door and demanded haven. The commoner, of course, gave the king the best chair in his house. Well, the chair turned out to be so sturdy and comfortable that the king took it back to Windsor Castle to have his joiners make some. From then on, that style of chair in all of its forms was called the Windsor."

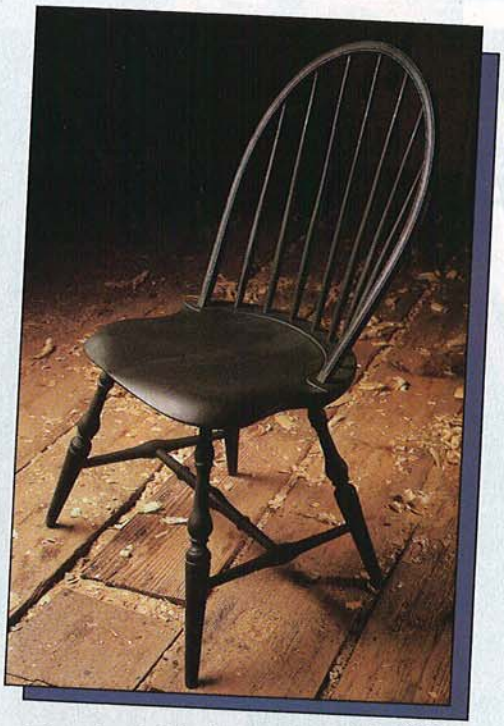
Despite its royal association, though, the Windsor chair wasn't aristocratic. "When the fine furniture of the day was made from mahogany and walnut, with fancy inlays and carving, the Windsor was quite plain, rustic, and made of common woods," the chairmaker explains. "In England, oak was traditional for the backs and spindles, elm for the seats, and beech for the legs and stretchers. In my shop, I substitute white birch for beech and use pine rather than elm for the seats, as was done in colonial America. But that's why Windsors were always painted—these woods were so different. And they weren't into staining different woods to match as we can do today."

Bob has heard, too, that Windsor chairs may have been the first production furniture. "Back then, craftsmen—called bodgers—set up their spring-pole lathes right in the forest to produce legs and spindles in quantity. They then sold the parts to chairmakers in the towns and villages who made the seats and backs, then assembled the chairs. That's why they were so commonplace in England and later in the colonies. Windsors were the cheap chairs of the age. But they were strong, comfortable, good looking, and stood the test of time."

One chair at a time

In his walkout basement workshop, Bob has established workstations for

Bob's ample supply of 20"-wide 8/4 white pine boards for chair seats air-dries under a blanket of snow. Tarps protect the wood from the elements.



A bow-back Windsor such as this $250 side chair nestles nicely up to a dining table. Its seat measures 18×18".

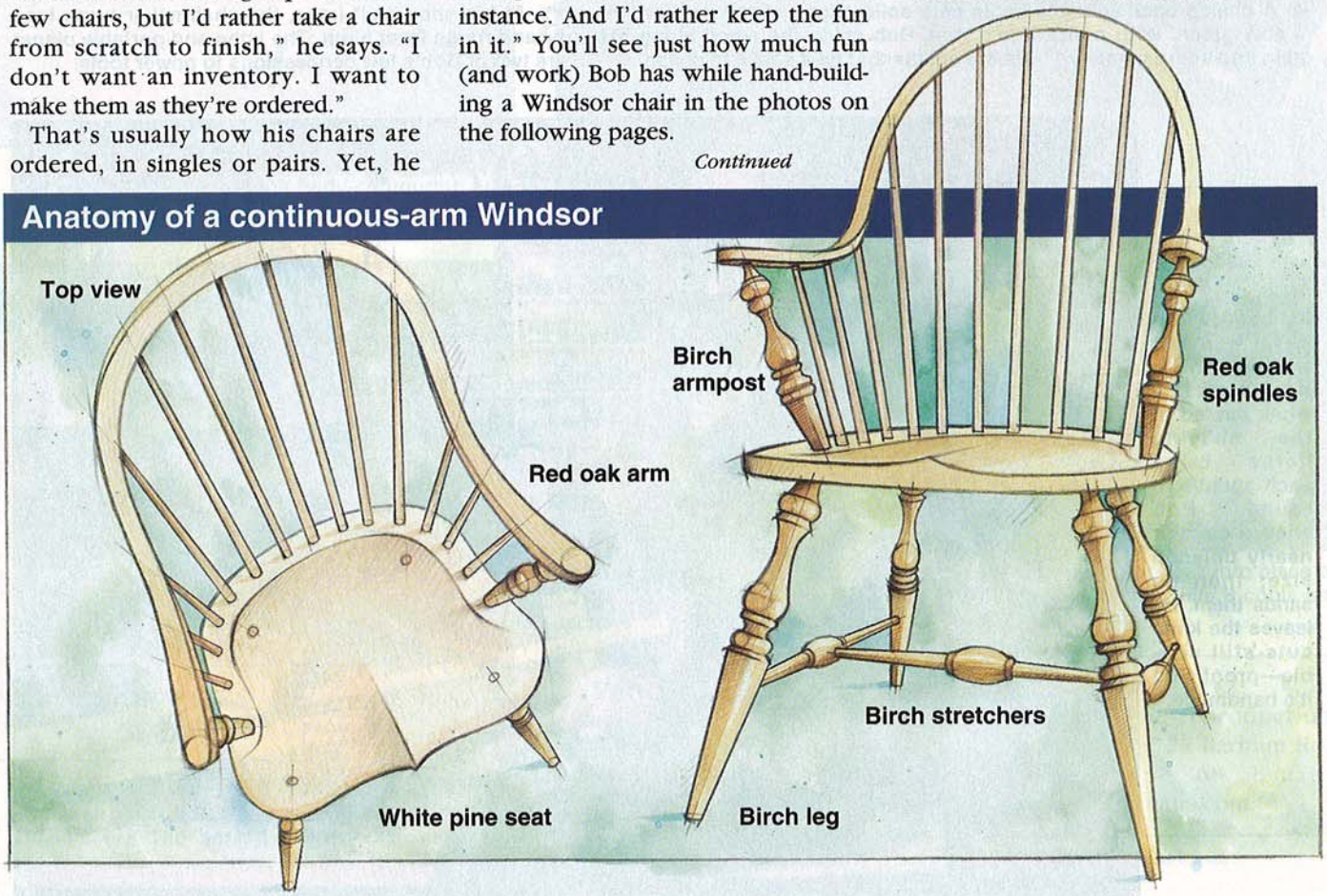
each step in making a chair. And that's how he builds them: one at a time, step by step.

"Occasionally, I'll sit at the shaving horse and make enough spindles for a few chairs, but I'd rather take a chair from scratch to finish," he says. "I don't want an inventory. I want to make them as they're ordered."

That's usually how his chairs are ordered, in singles or pairs. Yet, he has made as many as a dozen for a single customer. "But even then, I didn't turn to batch construction," he comments. "It can get boring, as well as tiring, to adze out 12 seats for instance. And I'd rather keep the fun in it." You'll see just how much fun (and work) Bob has while hand-building a Windsor chair in the photos on the following pages.

Continued

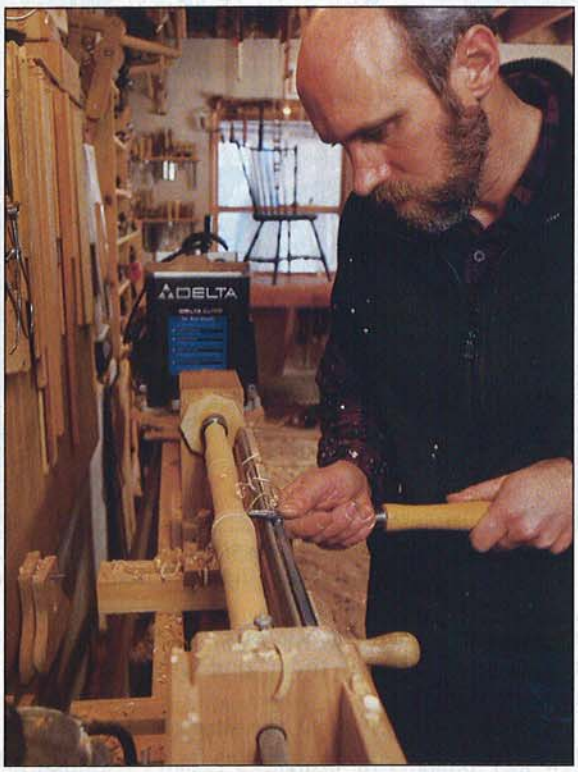
Anatomy of a continuous-arm Windsor



North-Country Windsors

STEPS IN CHAIR BUILDING

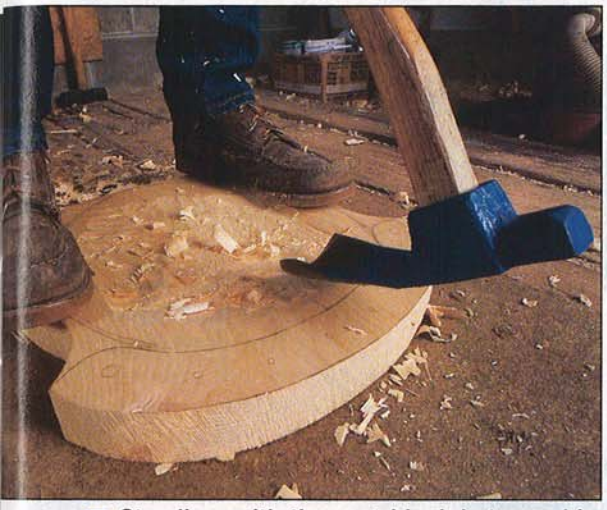
1 A chair's back spindles begin as a solid chunk of red oak, preferably green. With a mallet and froe, Bob splits the wood along the grain into approximately 1"-square splints that he'll shave to shape.



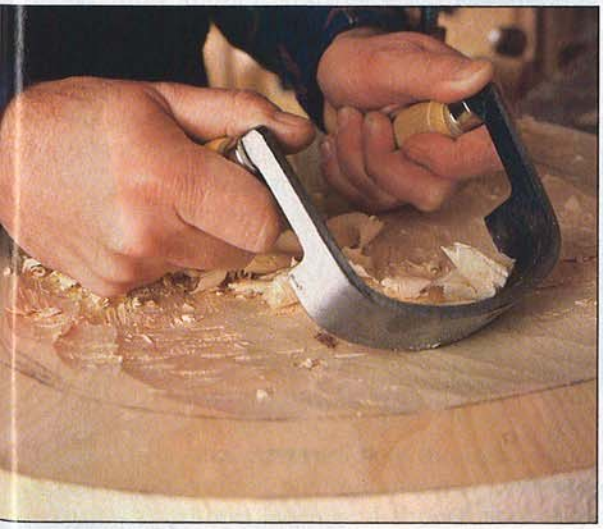
3 At his shop-built lathe, the chairmaker turns legs and rungs from birch. The lathe and portable planer are two of Bob's few concessions to power tools.

2 Long, careful strokes with a sharp drawknife while seated at the shaving horse bring each spindle to round. Bob shaves each to nearly finished size; then he sands them. He leaves the knife cuts still visible—proof that it's handmade.

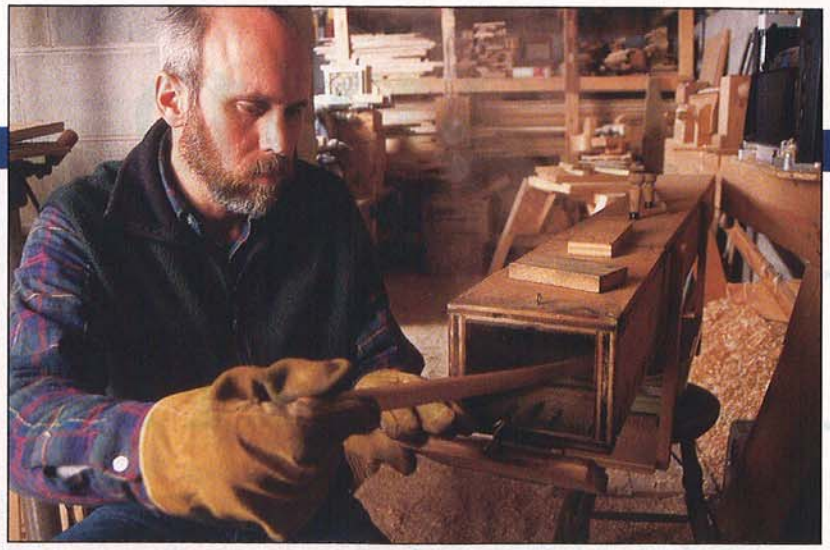
4 A chair seat begins as a solid piece of white pine, which Bob cuts to shape with a bow saw. He then clamps it in place at his workbench and bevels its edge with a drawknife.



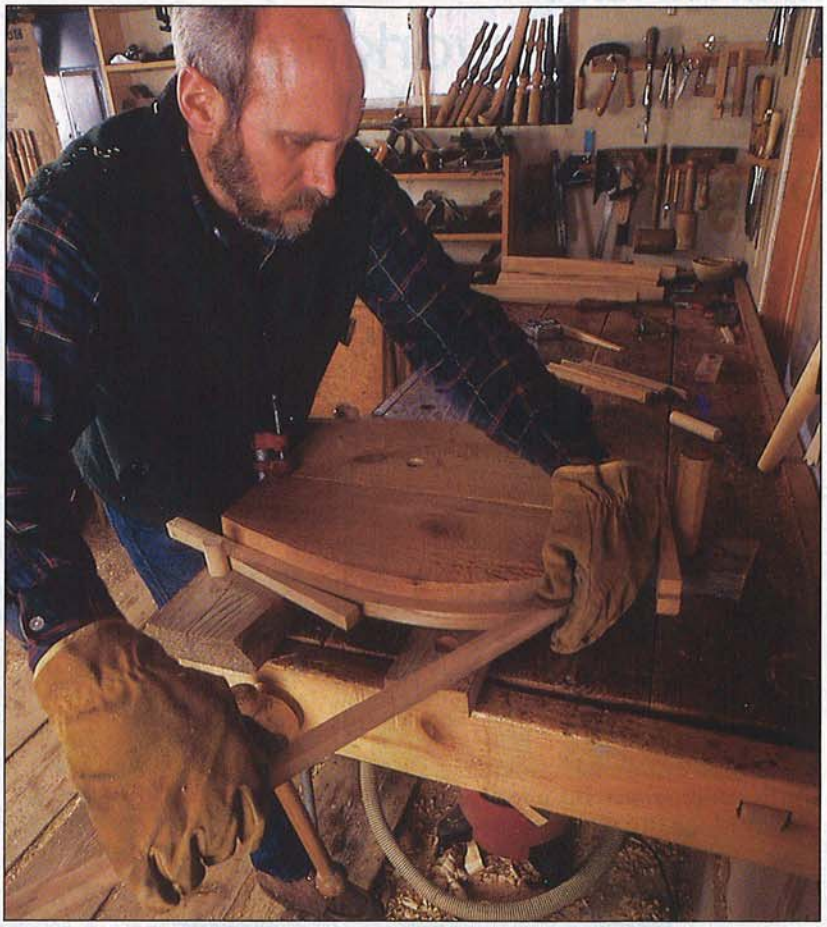
5 Standing, with the seat blank between his feet, Bob roughs out the body-contouring hollow with an adze. "I was told I'd save on boots if I did it barefoot," he jokes.



6 With the seat firmly clamped to his workbench, Bob finishes cleaning out the hollow with a scorp. The tool cuts the wood cleanly, leaving but a little unevenness for final sanding.



7 The red oak back for a bow-back Windsor comes out of the steambox. For good flexibility, Bob likes to steam the ¾×¾" piece about two hours.



8 Hands protected by heavy gloves, Bob bends the still-hot oak into place on the bow-shaped jig. Shims will lock the wood into place while it cools and accepts its new shape.

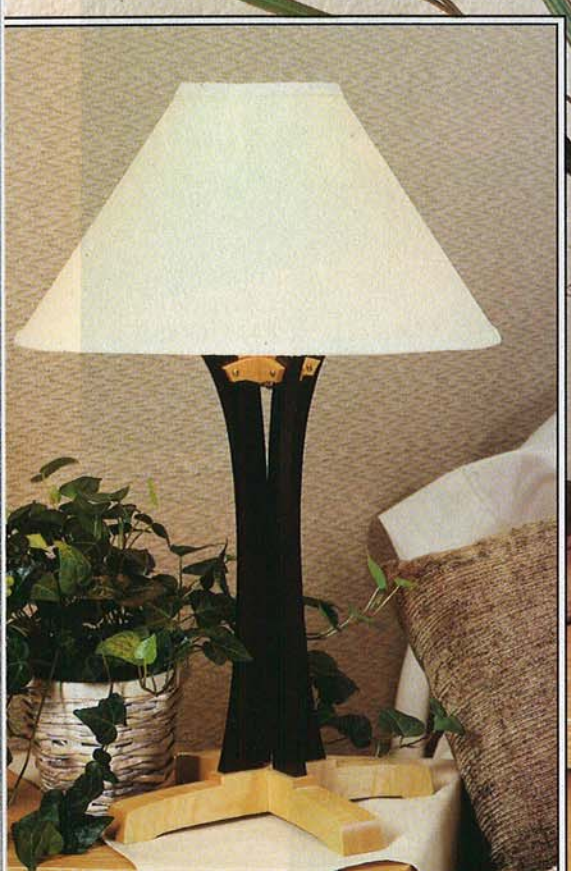
Want to see more North-Country Windsors?

For a color brochure of Bob's full line of antique reproduction Windsors, send $2 to Bob Dillon Windsor Chairs, 4724 Barnum Rd. N.W., Hackensack, MN 56452. Call 888/875-9868. E-mail: bdwc@uslink.net. Web site: www.bobdillonwindsorchairs.com.

Written by Peter J. Stephano; Photographs, Layne Kennedy; Illustrations, Brian Jensen

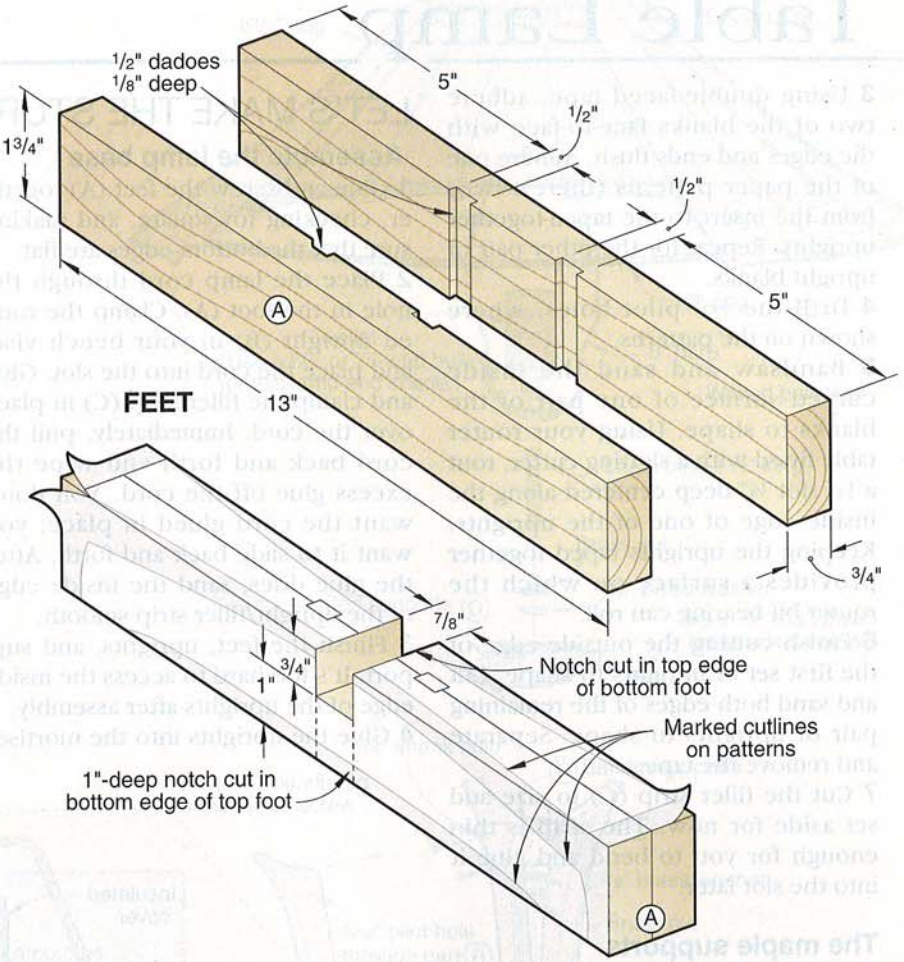
Lamp of a Lifetime

Illuminate your woodworking talents with this original table lamp



Woodworking novices and experts alike can enjoy building this exquisite piece. Build just the base and buy a lamp shade as shown in the inset photograph at *far left*. Or go all out and build the beautiful veneer-on-plastic shade shown at *left*. Whatever your decision, this lamp will surely garner glowing comments.

Note: *For ease in acquiring the hardware for this project, see the Buying Guide accompanying the Bill of Materials for our source.*



BEGIN WITH A STURDY LAMP BASE

Machine the mating maple feet first

1 To form the feet (A), start by cutting four pieces of ¾"-thick stock (we used maple) to 1¾" wide by 13" long.

2 Cut a mating pair of ½" dadoes ⅛" deep in each foot half where shown on the Feet drawing.

3 To form each foot, glue and clamp two pieces face-to-face with the dadoes aligned and the edges and ends. Wipe off the excess glue with a damp cloth, and remove any glue from the dadoes in each foot.

4 Apply the paper patterns from the *WOOD PATTERNS®* insert in the center of the magazine to the side and top of one foot. Align the patterns with the dadoes.

5 Cut a ⅞" notch ¾" deep, centered in the top edge of the bottom foot. Then, cut a ⅞" notch 1" deep, centered in the bottom edge of the top foot. See the Feet and Exploded View drawings for reference.

6 Drill a ¼" cord-access hole through the bottom foot, where dimensioned on the pattern insert and shown on the Exploded View drawing.

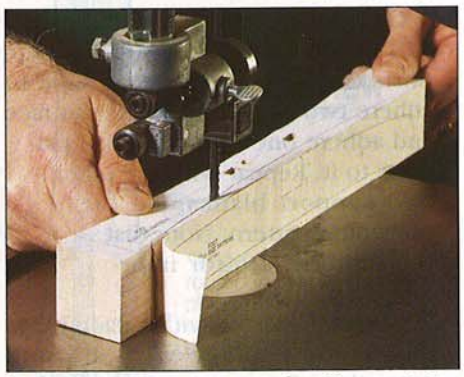
7 Bandsaw the Top View pattern to shape on the foot with the patterns applied, as shown in the *Photo at far right*. So as not to ruin the front view paper pattern when making the first set of top view cuts, peel the Front View pattern back slightly as shown in the photo.

SEE THE WOOD PATTERNS® INSERT FOR FULL-SIZE PATTERNS

8 Using the foot cut in Step 7 as a template, trace the top outline onto the top surface of the second foot. Bandsaw the second foot top view to shape. Use double-faced tape to adhere the two waste pieces from each foot back in place.

9 Bandsaw along the cutlines of the Front View pattern to cut the foot with applied patterns to shape. Trace its outline onto the other foot, and cut it to shape. Remove the taped-on waste pieces from each foot.

10 Sand the bandsawn edges on each foot to remove the saw marks. When sanding the sides of the feet, be careful not to sand too much, resulting in a loose fit of the mating notches.



Bandsaw along the top cutlines of the applied paper Top View pattern. Later, tape the two waste pieces back in place.

Next, add a pair of graceful uprights

1 Cut four pieces of ½" wenge or ebonized maple to 2½" wide by 15⅜" long for the upright blanks (B).

2 Apply the full-size patterns to two of the upright blanks. Using the Tenon detail on the pattern insert for reference, use your tablesaw with a dado blade to form a tenon on the bottom end of each upright to fit snug inside the mortises in the feet.

Continued

Table Lamp

3 Using double-faced tape, adhere two of the blanks face-to-face with the edges and ends flush. Adhere one of the paper patterns (there's two) from the insert to the taped-together uprights. Repeat for the other pair of upright blanks.
4 Drill the 3/32" pilot holes, where shown on the patterns.
5 Bandsaw and sand the inside curved surface of one pair of the blanks to shape. Using your router table fitted with a slotting cutter, rout a 1/4" slot 1/4" deep centered along the inside edge of one of the uprights. Keeping the uprights taped together provides a surface on which the router bit bearing can roll.
6 Finish cutting the outside edge of the first set of uprights to shape. Cut and sand both edges of the remaining pair of uprights to shape. Separate and remove the tape.
7 Cut the filler strip (C) to size and set aside for now. The strip is thin enough for you to bend and glue it into the slot later.

The maple supports come next

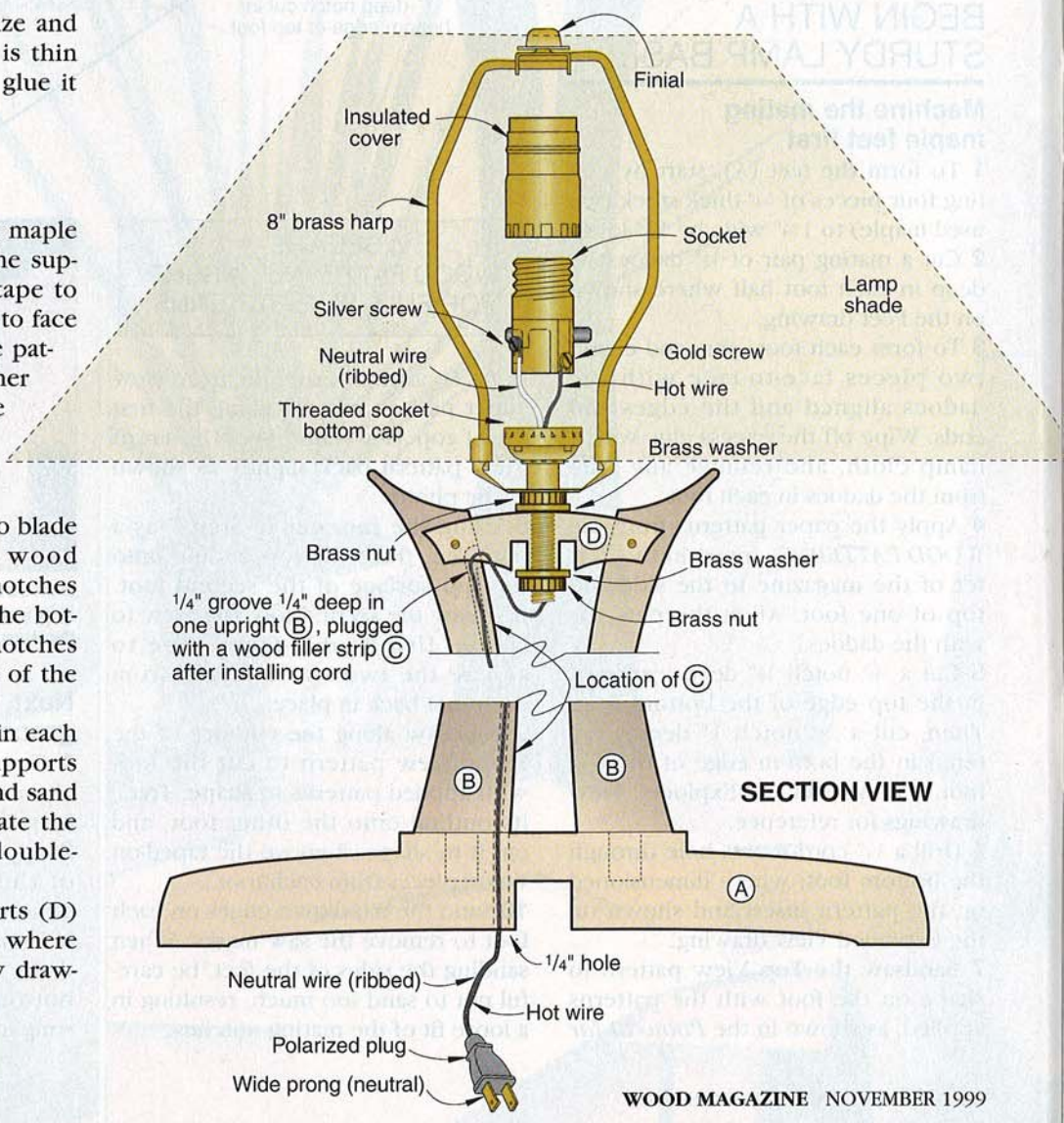
1 Cut four pieces of 1/4"-thick maple to 1" wide by 3 3/4" long for the supports (D). Use double-faced tape to adhere two of the pieces face to face and adhere one of the full-size patterns to it. Repeat with the other two support blanks and the remaining pattern. Note that the patterns are for interlocking pieces.
2 Fit your tablesaw with a dado blade and a miter gauge with a wood extension. Cut a pair of 1/4" notches 9/16" deep in the top edge of the bottom supports. Then cut 1/4" notches 7/16" deep in the bottom edge of the top supports.
3 Drill the screw shank holes in each pair of the taped-together supports (D). Bandsaw (or scrollsaw) and sand the supports to shape. Separate the supports, and remove the double-faced tape.
4 Glue and clamp the supports (D) together, mating the notches where shown on the Exploded View drawing and accompanying detail.

LET'S MAKE THE STURDY BASE

Assemble the lamp base

1 Glue and screw the feet (A) together, checking for square, and making sure that the bottom edges are flat.
2 Place the lamp cord through the hole in the foot (A). Clamp the routed upright (B) in your bench vise, and place the cord into the slot. Glue and clamp the filler strip (C) in place over the cord. Immediately, pull the cord back and forth and wipe the excess glue off the cord. You don't want the cord glued in place; you want it to slide back and forth. After the glue dries, sand the inside edge of the upright/filler strip smooth.
3 Finish the feet, uprights, and support. It's too hard to access the inside edge of the uprights after assembly.
4 Glue the uprights into the mortises in the base, positioning the upright with the cord over the cord-access hole in the foot. Pull any excess cord tight between the foot and upright. Immediately slide the support assembly (D) in place to align the supports.
5 Align the shank holes in the supports with the pilot holes in the uprights. Drive the screws to secure the supports to the uprights. (For added strength, we added a drop of instant glue to the threads of each screw before driving them in place.)
6 Connect the socket assembly to the lamp supports (D), where shown on the Section View drawing *below*. Wire the top end of the electrical cord to the socket. Pull the cord through the hole in the bottom of the base to remove the slack.

Continued



Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A* feet	1½"	1¾"	12"	LM	2
B uprights	½"	2½"	15⅜"	W	4
C filler strip	¼"	⅛"	13¼"	W	1
D supports	¼"	1"	3¾"	M	4
E* panels	1/16"	3½"	9⁵/16"	AV	20

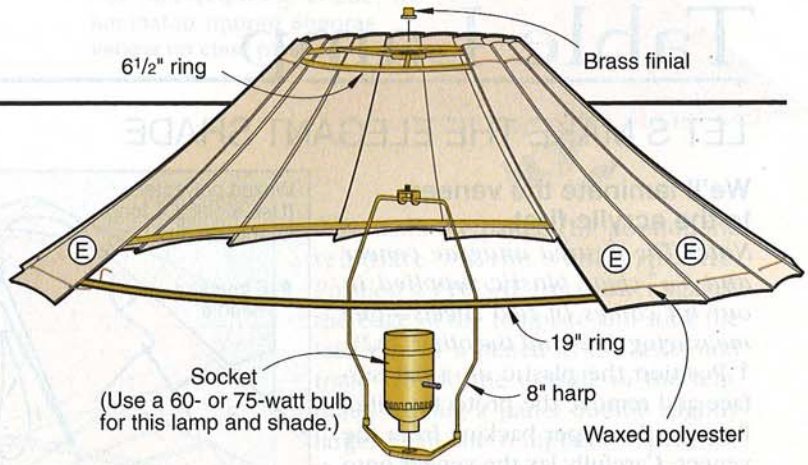
*Cut parts marked with an * oversized. Trim to finished size according to the how-to instructions.

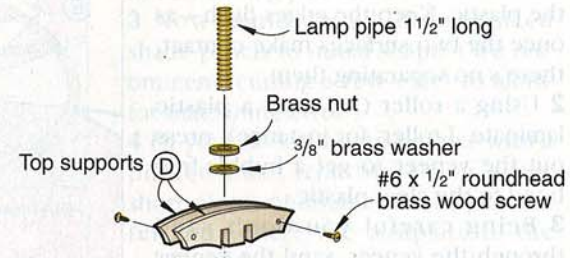
Materials Key: LM–laminated maple, W–wenge, M–maple, AV–acrylic and veneer.

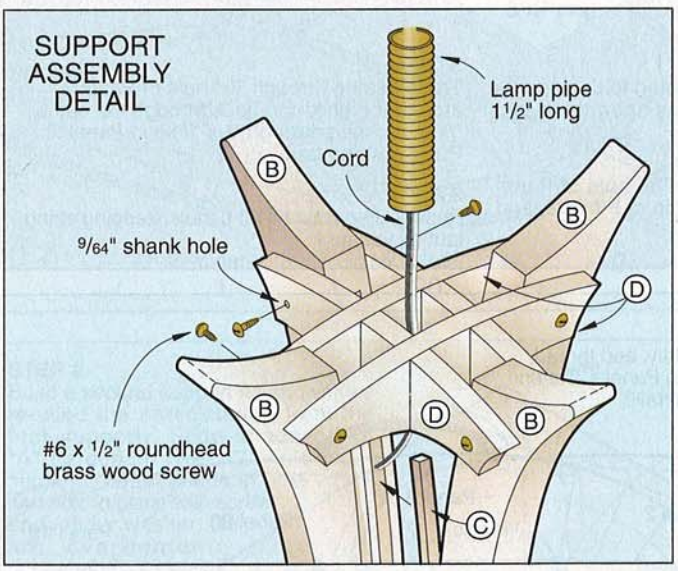
Supplies: All the hardware listed in the Buying Guide below, plus clear finish.

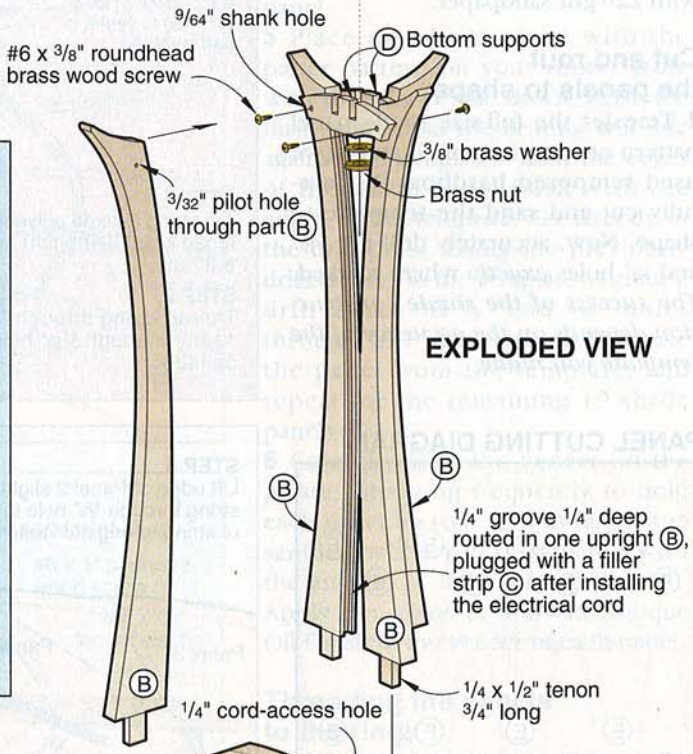
Buying Guide

Hardware. 1–#8×1¼" flathead wood screw; 8–#6×½" roundhead brass wood screws, #10 SAE flat washer, ⁵/32×⅞" fender washer, socket assembly with 8" harp, brass finial and 8' cord set; 6½" and 19"-diameter lamp rings; 6 square feet of 1/32" clear plastic; 6 square feet of highly figured, adhesive-backed anagrae veneer; 13' of waxed polyester string; #18 needle. Kit no. 1176, $44.95 plus $6.45 shipping. MN residents add $2.92 tax. Meisel Hardware Specialties, P.O. Box 70W, Mound, MN 55364-0070. Or, call 800/441-9870; outside the US call 612/471-8550.

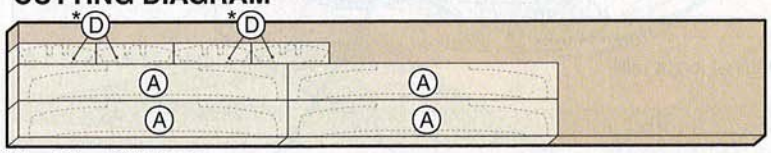




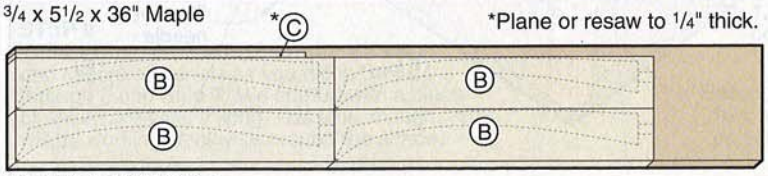




CUTTING DIAGRAM



3/4 x 5½ x 36" Maple



½ x 5½ x 36" Wenge

*Plane or resaw to ¼" thick.

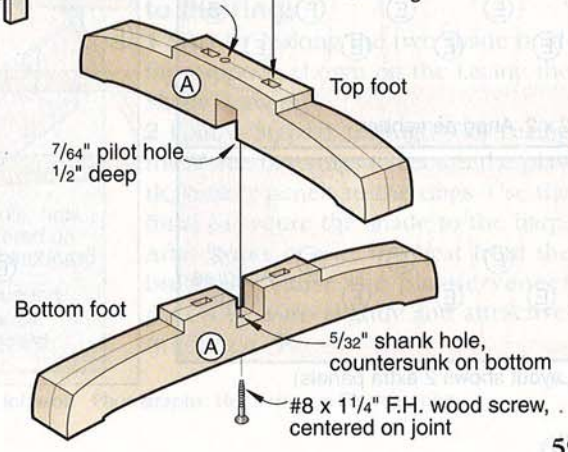


Table Lamp

LET'S MAKE THE ELEGANT SHADE

We'll laminate the veneer to the acrylic first

Note: *The figured anagrae veneer and 1/32" clear plastic supplied in our kit comes in two sheets—one measuring 1x2' and the other 2x2'.*

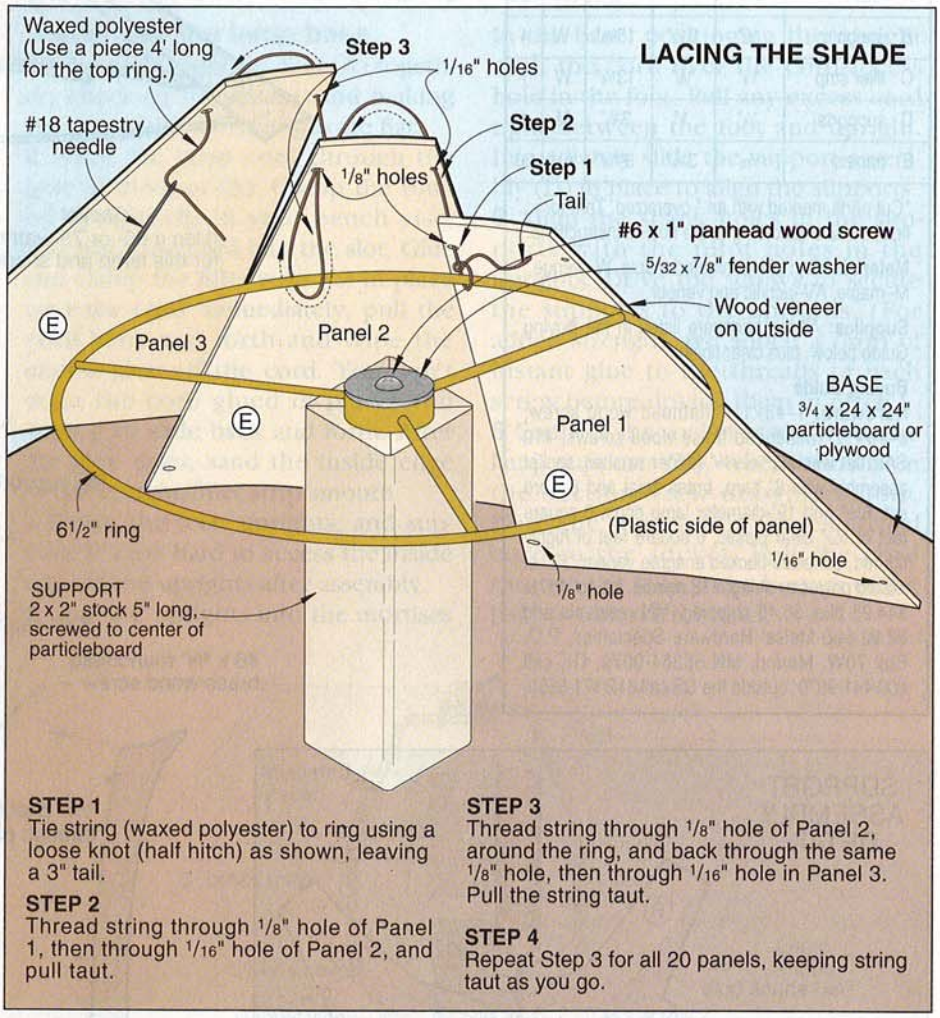
1 Position the plastic on a flat surface and remove the protective film. Remove the paper backing from the veneer. Carefully lay the veneer onto the plastic. Keep the edges flush—as once the two surfaces make contact, there's no separating them.

2 Using a roller (we used a plastic laminate J-roller, for instance), press out the veneer to get a bubble-free bond to the clear plastic.

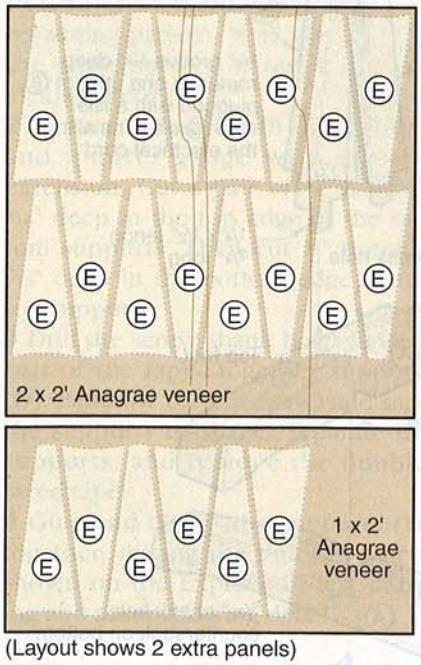
3 Being careful you don't sand through the veneer, sand the veneer with 220-grit sandpaper.

Cut and rout the panels to shape

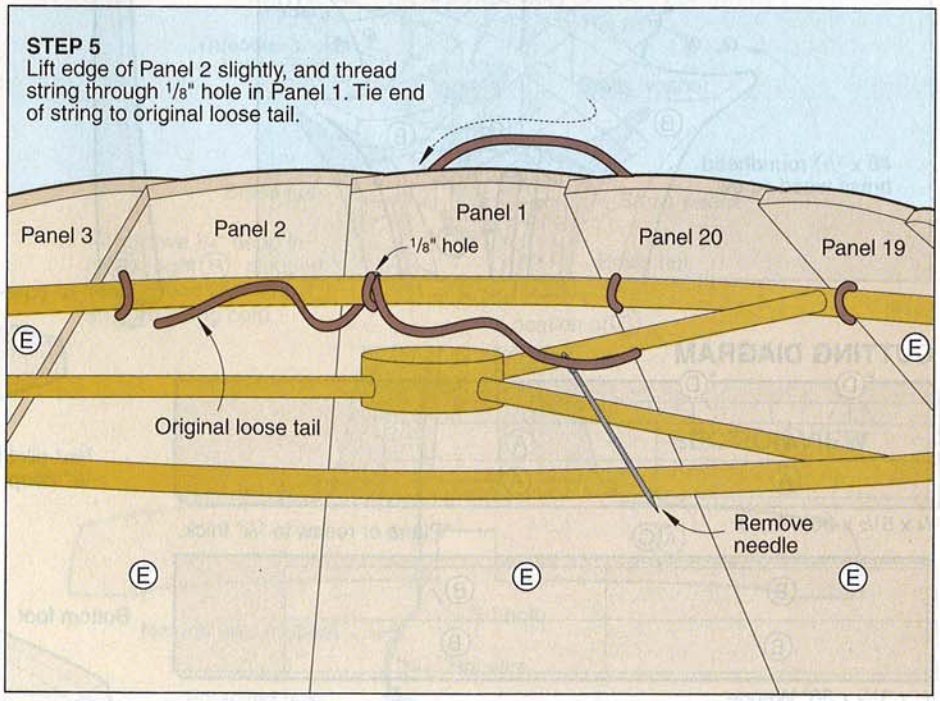
1 Transfer the full-size shade panel pattern onto a piece of 1/4" stock (we used tempered hardboard). Carefully cut and sand the template to shape. Now, accurately drill the 1/16" and 1/8" holes *exactly* where marked. *The success of the shade construction depends on the accuracy of the template you make.*


LACING THE SHADE
Waxed polyester (Use a piece 4' long for the top ring.)
#18 tapestry needle
Step 3
1/16" holes
Step 2
1/8" holes
Step 1
Tail
#6 x 1" panhead wood screw
5/32 x 7/8" fender washer
Wood veneer on outside
Panel 3
Panel 2
Panel 1
BASE
3/4 x 24 x 24" particleboard or plywood
6 1/2" ring
(Plastic side of panel)
1/16" hole
1/8" hole
SUPPORT
2 x 2" stock 5" long, screwed to center of particleboard
STEP 1
Tie string (waxed polyester) to ring using a loose knot (half hitch) as shown, leaving a 3" tail.
STEP 2
Thread string through 1/8" hole of Panel 1, then through 1/16" hole of Panel 2, and pull taut.
STEP 3
Thread string through 1/8" hole of Panel 2, around the ring, and back through the same 1/8" hole, then through 1/16" hole in Panel 3. Pull the string taut.
STEP 4
Repeat Step 3 for all 20 panels, keeping string taut as you go.

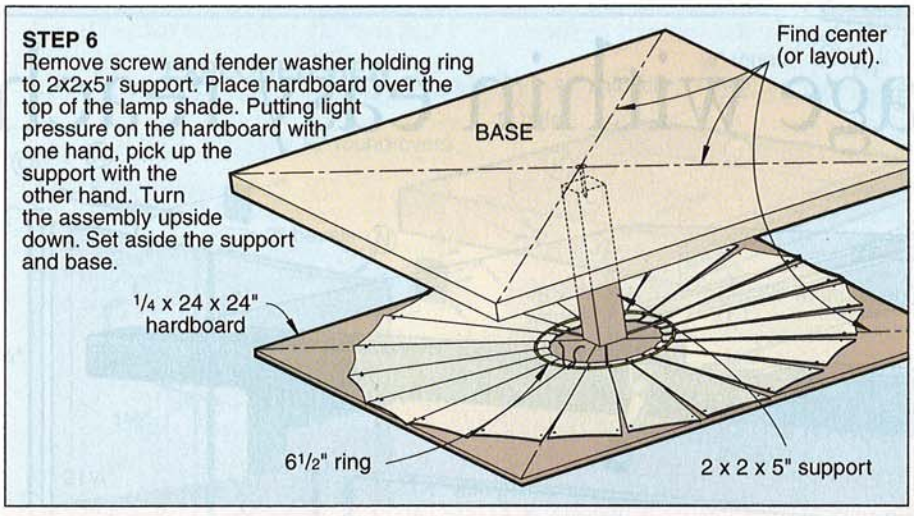
PANEL CUTTING DIAGRAM

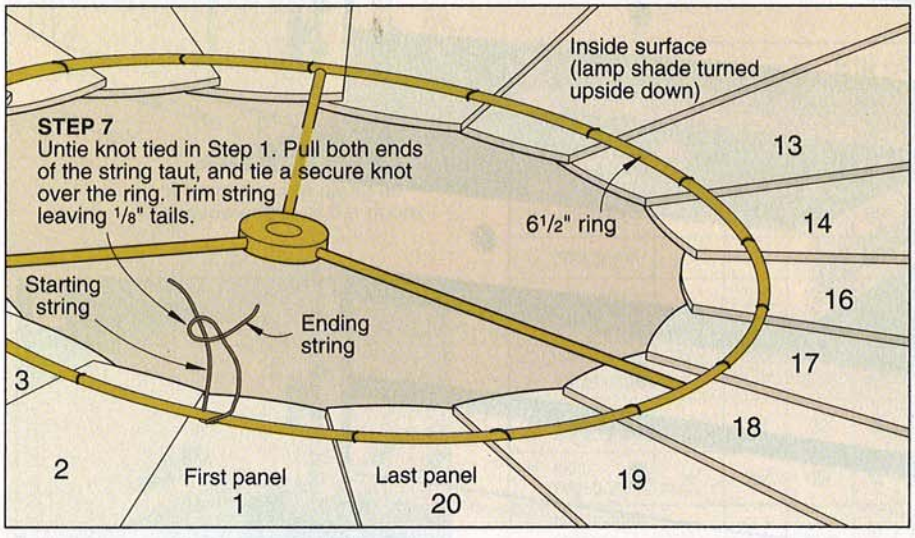


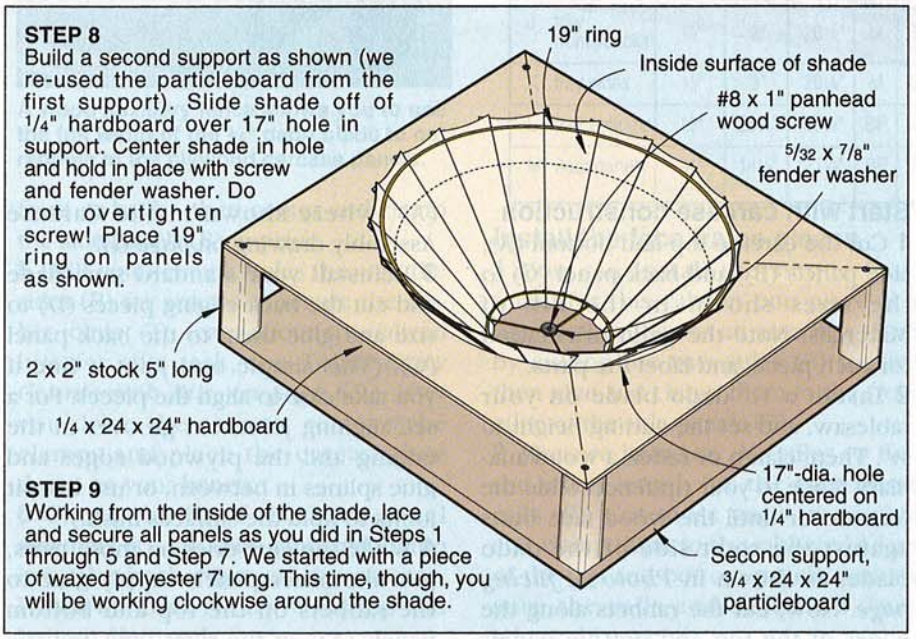
(Layout shows 2 extra panels)


STEP 5
Lift edge of Panel 2 slightly, and thread string through 1/8" hole in Panel 1. Tie end of string to original loose tail.
Panel 3
Panel 2
Panel 1
1/8" hole
Panel 20
Panel 19
Original loose tail
Remove needle

For this exquisite shade, we laminated figured anagrae veneer on clear plastic.


STEP 6
Remove screw and fender washer holding ring to 2x2x5" support. Place hardboard over the top of the lamp shade. Putting light pressure on the hardboard with one hand, pick up the support with the other hand. Turn the assembly upside down. Set aside the support and base.
Find center (or layout).
BASE
1/4 x 24 x 24" hardboard
6 1/2" ring
2 x 2 x 5" support




STEP 8
Build a second support as shown (we re-used the particleboard from the first support). Slide shade off of 1/4" hardboard over 17" hole in support. Center shade in hole and hold in place with screw and fender washer. Do not overtighten screw! Place 19" ring on panels as shown.
19" ring
Inside surface of shade
#8 x 1" panhead wood screw
5/32 x 7/8" fender washer
2 x 2" stock 5" long
1/4 x 24 x 24" hardboard
17"-dia. hole centered on 1/4" hardboard
Second support, 3/4 x 24 x 24" particleboard
STEP 9
Working from the inside of the shade, lace and secure all panels as you did in Steps 1 through 5 and Step 7. We started with a piece of waxed polyester 7' long. This time, though, you will be working clockwise around the shade.

2 To mark the panels (E), position the template on the veneer/plastic. Position a #10 SAE flat washer against the edge of the template and stick the lead end of a pencil in the hole, and trace around the outside of the template, leaving a panel outline slightly larger than the template. Repeat for the remaining panels.

3 Now, bandsaw all 20 over-sized shade panels to initial shape. (We recommend cutting a few extra to allow for machining error.)

4 Fit your table-mounted router with a piloted flush trim bit. Using a few short pieces of double-faced tape, center and adhere the template to the acrylic side of one over-sized shade panel.

5 Place the shade panel with the paper pattern on your router table with the veneer side down. Raise the flush trim bit so the bearing will ride against the template. Rout the edges of the shade panel flush with the edges of the template. Go directly to the drill press. Using the previously drilled holes in the template as guides, drill a pair of ⅛" and 1/16" holes through the shade panel. Separate the panel from the template, and repeat for the remaining 19 shade panels (E).

6 Carefully sand the veneer on the plastic, stopping frequently to hold each panel up to a 75-watt bulb. Stop sanding when you're satisfied with the amount of light shining through. Apply two coats of Minwax Antique Oil Finish to the veneer of each panel.

Threading the panels to the rings

1 Start by making the two shade holding supports shown on the Lacing the Shade drawings.

2 Follow Steps 1 through 9 of Lacing the Shade drawings to secure the plastic/veneer panels to the rings. Use the finial to secure the shade to the harp. After hours of use, the heat from the bulb may cause the plastic/veneer panels to warp slightly and attractively concave.

Project Design: ©Carl Lind, Seattle, Washington Illustrations: Roxanne LeMoine; Lorna Johnson Photographs: Hetherington Photography

Tablesaw Accessories

Savvy storage within easy reach

Extension tables for tablesaws make woodworking easier, but they sure eat up a lot of precious floor space. This handsome rollaway cabinet helps you put that valuable real estate to good use. We store blades, jigs, and accessories in ours.

Start with carcase construction

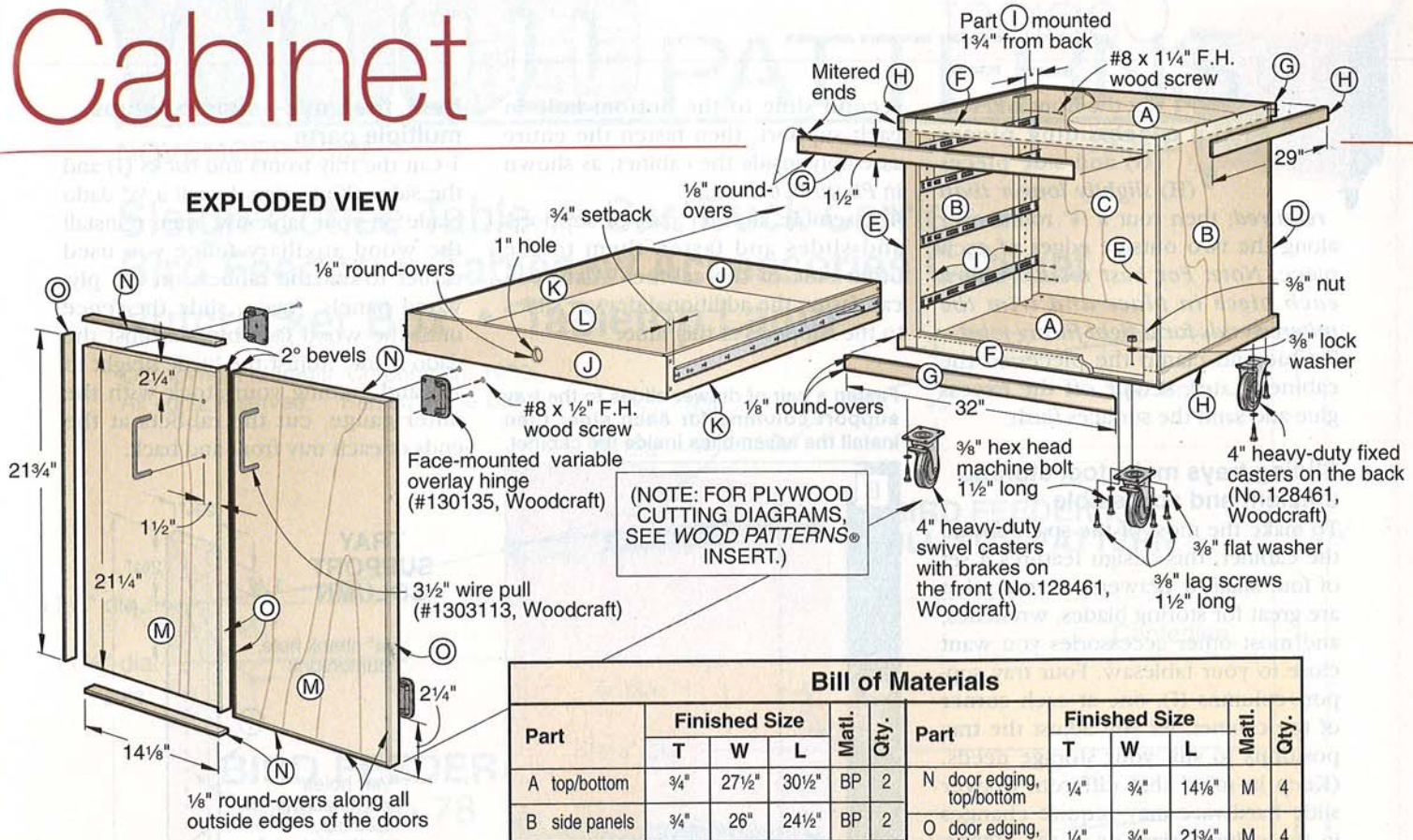
1 Cut the carcase top and bottom (A), side panels (B), and back panel (C) to the sizes shown in the Bill of Materials. Note the grain orientation for each piece, and label the parts.

2 Install a ¾" dado blade on your tablesaw, and set the cutting height to ½". Then, clamp or fasten a wood auxiliary fence to your rip fence. Slide the fence over until the wood face butts against the right side of the dado blade, as shown in *Photo A, facing page*. Now, cut the rabbets along the edges of the top and bottom panels (A), where shown in the Carcase Assembly drawing on *page 64*.

3 Reinstall your standard saw blade and cut the back edging pieces (D) to size and glue them to the back panel (C). (This simple butt joint is fine if you take care to align the pieces. For a self-aligning joint, cut grooves in the edging and the plywood edges and glue splines in between, or use biscuit joints to hold the surfaces flush.)

4 While the glue dries on those parts, join the other panels. Apply glue to the rabbets on the top and bottom panels (A)—at the sides only, not the

Cabinet



A wood auxiliary fence allows you to use the full width of the ¾" dado blade to cut rabbets in the plywood carcase panels.

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A top/bottom	¾"	27½"	30½"	BP	2
B side panels	¾"	26"	24½"	BP	2
C back panel	¾"	29"	24½"	BP	1
D back edging	¾"	¾"	24½"	M	2
E frame stiles	¾"	1½"	24½"	M	2
F frame rails	¾"	1⅝"	27½"	M	2
G front/back edgeband	¾"	1½"	32"	M	4
H side edgeband	¾"	1½"	29"	M	4
I tray support columns	¾"	2¾"	23½"	M	4
J tray fronts/backs	½"	3"	26½"	M	8
K tray sides	½"	3"	26¼"	M	8
L tray bottoms	½"	26¼"	26¼"	BP	4
M door panels	¾"	14⅛"	21¼"	BP	2
N door edging, top/bottom	¼"	¾"	14⅛"	M	4
O door edging, sides	¼"	¾"	21¾"	M	4

Materials Key: BP-birch plywood, M-maple.

Supplies: #8x1¼" flathead wood screws (116), #8x1½" flathead wood screws (16), #8x2¼" flathead wood screws (4), ¼-20x¾" roundhead machine screws (16), ⅜x1½" lag screws (12), ⅜x1½" hex head machine bolts (4), ⅜" flat washers (20), ⅜" lock washers (4), ⅜" hex nuts (4), 2x8' nonslip rug cushion (1).

Buying Guide

In addition to the lumber and supplies shown above, the following items (or appropriate substitutes) are required for this project. All are available from Woodcraft, P.O. Box 1686, Parkersburg, WV 26102, 800/225-1153. Heavy-duty 4" casters (set of 4), no. 128461; Accuride Model 2132 drawer slides, 26" long (4 sets), no. 130595; 3½" wire pulls (2), no. 130311; and face-mount overlay hinges (2 pair), no. 130135.

front or back—then center and clamp the side panels (B) in place.

5 Drill countersunk holes through the sides (B) for screws to secure the rabbet joints. (To learn about specialized bits for this task, see *Triple-Duty Countersink Bits*, on *page 65*.) After you drive the screws, remove the clamps and place the carcase face down on your bench.

6 Check the fit of the back panel assembly (C, D); then glue and clamp it to the back edges of the carcase. Fasten the back (C, D) to the top and bottom (A) panels.

Install the face frame pieces

1 You can install the simple face-frame for this cabinet one piece at a time, rather than as an assembly. Start by cutting the two stiles (E) to size; then glue and clamp them to the front edge of the side panels (B).

2 Measure between the stiles to find the exact length for the face frame rails (F). Cut these parts, then glue and clamp them to the rabbeted edges of the top and bottom panels, making sure the rails and stiles are flush where they meet.

3 Next, at each corner of the face frame drill a countersunk hole through the edge of the stile and into the rail end. Then drive a #8×2¼" screw to connect them.

Edgebanding guards the cabinet

We hid the plywood edges around the cabinet top and bottom with maple edgebanding. Doing this also protects these edges from collisions around the shop.

Continued

1 Cut the front and rear edgebanding pieces (G) and side pieces (H) *slightly longer than required*; then rout a ⅛" round-over along the two outside edges of each piece. *Note: For best results, mark each piece in place and trim the mitered ends for a tight-fitting joint.*

2 Glue and clamp the pieces to the cabinet. Later, scrape off the excess glue and sand the surfaces flush.

Sliding trays make tool storage efficient and accessible

To make the most of the space *inside* the cabinet, this design features a set of four shallow drawers, or trays, that are great for storing blades, wrenches, and most other accessories you want close to your tablesaw. Four tray support columns (I), one at each corner of the cabinet, let you adjust the tray positions to suit your storage needs. (Keep in mind that different drawer slide hardware may require changes in the column sizes or in the mounting hole placement.)

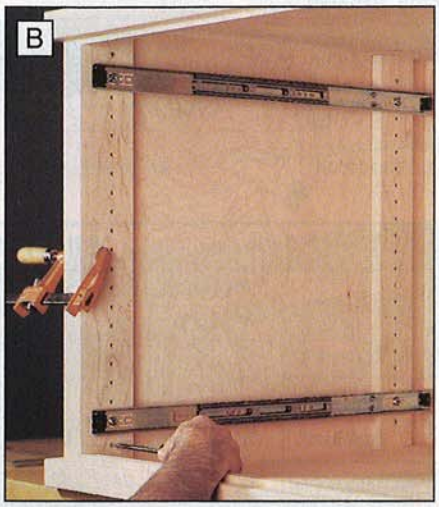
1 Cut the columns (I) to length and drill two mounting holes and a series of slide installation holes as shown in the Tray Support Column drawing. *(Note: For a simple and accurate technique for drilling a row of evenly spaced holes such as this, see the tip on* page 40.*)*

2 Tap a ¼-20 thread in each slide installation hole. (If this is a skill unfamiliar to you, see *Tap into This Handy Technique,* on cutting machine threads, on *page 12.*)

3 Lay a pair of the tray support columns on your workbench, and set them 18¾" apart (between inside edges). Place the "cabinet" half of a drawer slide on the support columns, and fasten it to the top threaded hole in each using ¼-20×¾" roundhead machine screws. *(Note that the front ends of the drawer slides are flush with the front edge of the tray support columns. The other half of each slide mechanism installs on the tray.)* Fasten a second slide to the bottom hole in each support, then fasten the entire assembly inside the cabinet, as shown in *Photo B, below.*

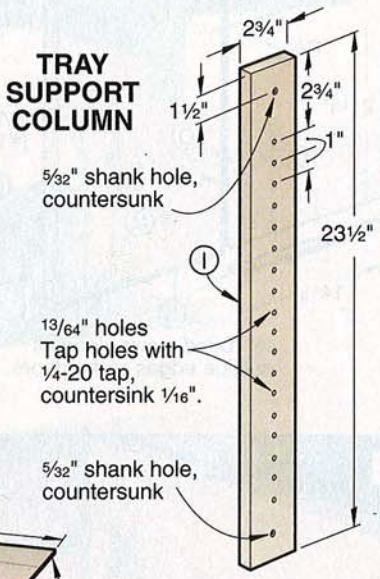
4 Assemble another pair of supports and slides and fasten them to the other side of the cabinet. Also, you can fasten the additional drawer slides to the supports at this time.

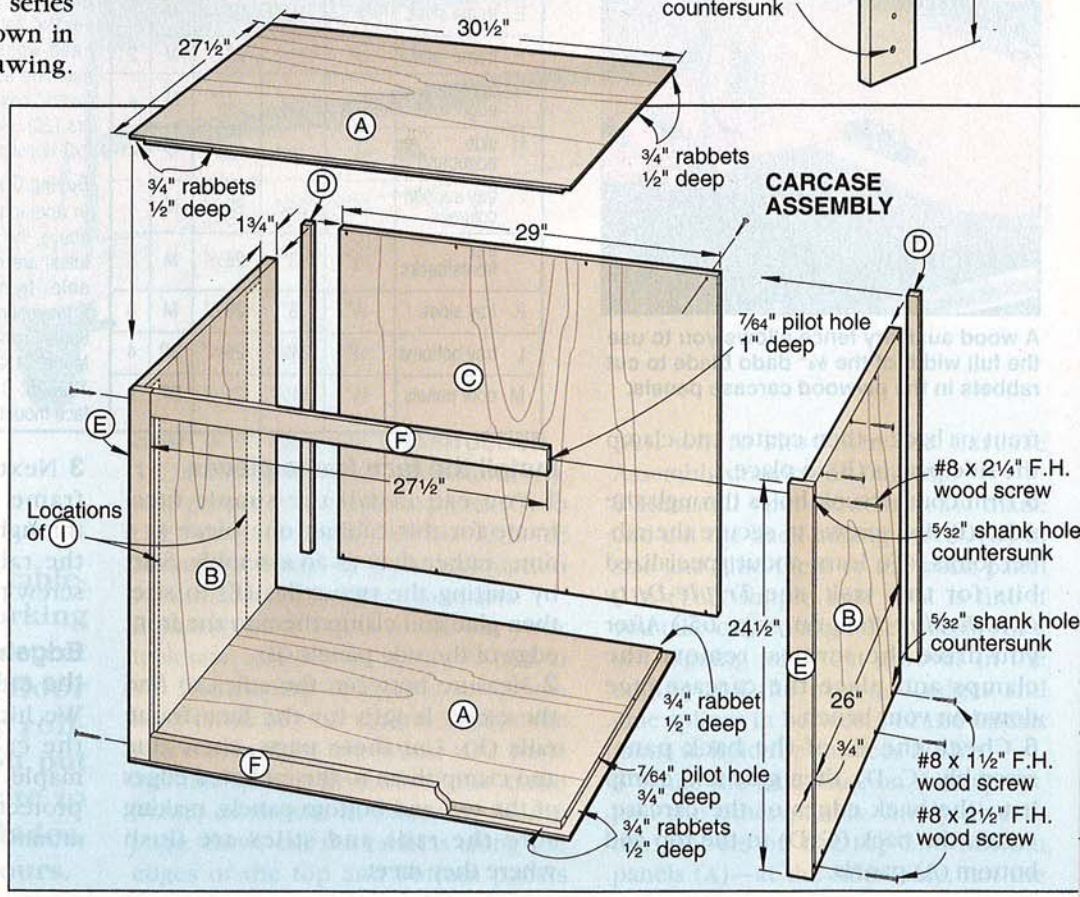
Fasten a pair of drawer slides to the tray support columns for each side; then install the assemblies inside the cabinet.



Next, the trays—simple setups, multiple parts

1 Cut the tray fronts and backs (J) and the sides (K) to size. Install a ½" dado blade on your tablesaw; then reinstall the wood auxiliary fence you used earlier to cut the rabbets on the plywood panels. Again, slide the fence until the wood face butts against the dado blade. Adjust the blade height to ⅜", and guiding your stock with the miter gauge, cut the rabbets at the ends of each tray front and back.





2 Without changing the blade or fence setup, cut rabbets along the lower inside edges of all the tray fronts, backs, and sides by guiding the edge of each piece against the wood auxiliary fence.

3 Drill a centered 1" hole in each tray front. These are finger-pulls, so for comfort rout a ⅛" round-over around the rim of the hole, on both faces.

4 Glue and clamp the tray assemblies together, checking for equal diagonal measurements to make sure each tray is square. Then drill countersunk holes for screws at each corner as shown in the Tray drawing.

5 Cut the ½" birch plywood to size for the tray bottoms (L). Place one tray assembly upside down on your workbench, and glue the tray bottom into the rabbets. Drill countersunk holes around the edges of the panel; then fasten it with screws.

6 When all the trays are assembled, rout a ⅛" round-over along all the exposed edges.

7 Install the remaining drawer slide hardware. Allow a ¾" backset from the face of the tray front, so it will end up flush with the face frame. Center the slide on the side of the tray as shown in the Tray drawing.

Getting closure: making and installing the doors

1 Cut the door panels (M) from your ¾" birch plywood.

2 Cut the maple edging pieces (N, O) for the door edges. Glue the top and bottom pieces (N) on first, making sure their ends are flush with the edges of the door panels. Then glue the remaining edgebanding (O) on the side edges of each door.

3 Cut a slight back-bevel (2° is plenty) on the inside door edges so they don't bind when you open the cabinet.

4 Sand all the surfaces flush; then rout a ⅛" round-over along the front edges of each assembled door panel.

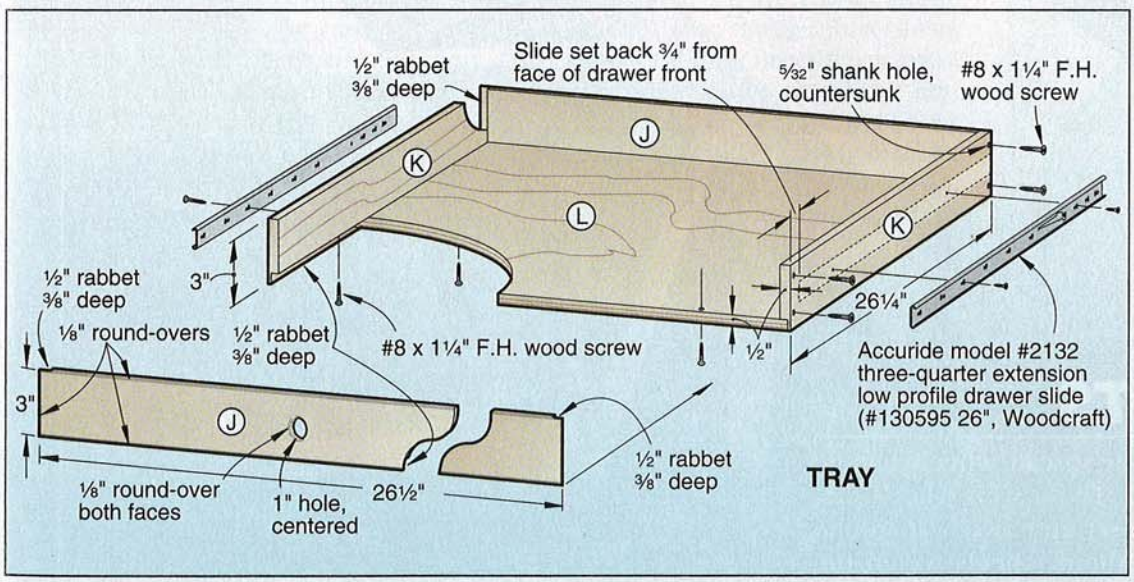
5 Make layout marks for positioning the door pulls and hinges; then drill holes for fasteners as required.

6 If you want a durable finish on the cabinet, apply two coats of semigloss polyurethane, sanding between coats. If you're applying finish to the trays as well, remove the slide hardware from the tray sides and the tray support columns and reinstall it when the finish has dried.

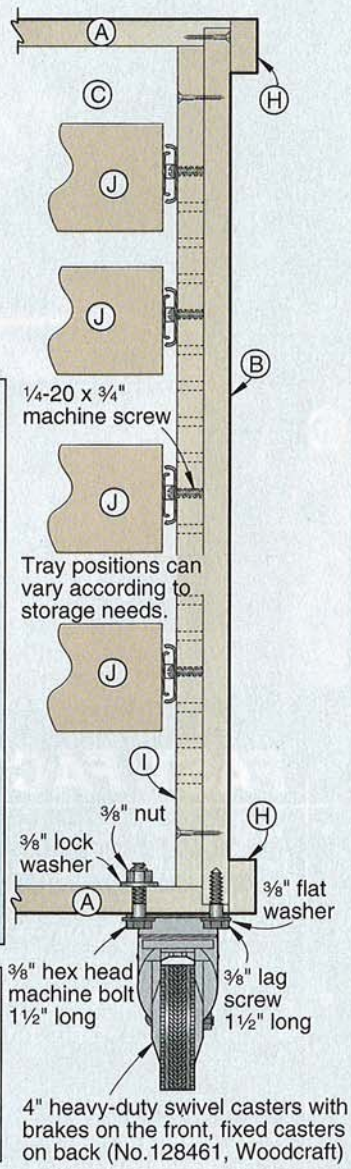
7 Set a protective mat (a carpet remnant or even cardboard will do) on your shop floor, and place the cabinet upside down on it. Set the casters in position on the bottom panel; then mark and drill for the bolts and lag screws. Mount the casters and turn the cabinet upright. (The caster set we used features front swivel casters that lock with a foot pedal, so the cabinet won't wander around the shop without permission.)

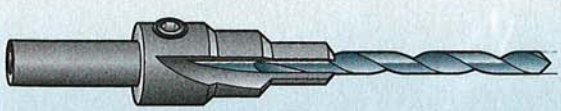
8 Install the door hinges and pulls, mount the doors, and fit all the trays to check clearance and travel. Make adjustments to the tray positions if necessary. Finally, if you're concerned about tools sliding around in the trays, cut up a nonslip rug cushion to use as liner material. Then fill 'er up!

Written by Bill LaHay
Photographs: Hetherington Photography
Illustrations: Brian Jenson;
Roxanne LeMoine; Lorna Johnson
Project Design: Chuck Hedlund



FRONT SECTION VIEW





TRIPLE-DUTY COUNTERSINK BITS

Drilling for screws often involves a series of sizes — a pilot hole for the threads, a clearance hole for the upper shank, and a countersink or counterbore to recess the screw head. Instead of swapping out bits for each step, use a combination bit such as the one shown *at left.* It shapes the hole in just one pass.

Portable Mitersaw Stands

Have saw, will travel

FAST FACTS

- Models with large, wide-spread wheels handle better on rough terrain. Those with wheels that contact the floor when set up move best around the shop. Versions without wheels weigh the least and can be carried anywhere.
- A shop-built mitersaw stand might cost less than a commercial stand, but offers little in the way of portability.
- You can configure some stands to work well with other power tools, such as a portable planer or benchtop tablesaw.

How many times have you gotten down on all fours just to make a cut with your mitersaw? Or fumbled with scraps of wood or a roller stand to provide workpiece support? With a mitersaw workstation, you'll not only work with greater speed and ease, but you'll free up valuable shop space, too. And because they can go mobile easily, they're equally adept when cutting deck lumber in the backyard or trimming molding in any room of the house.

A few words about the leggy models and how we tested them

Although you might find some of the nine tested stands on a construction site, we chose them based first on their merits in the shop, then for their road-worthiness. Each model folds and/or disassembles for more compact storage, and provides a minimum 3' of stock support to at least one side of the blade.

After assembling the stands and checking the fit and finish, we mounted a variety of sizes and styles of mitersaws—from 8¼ to 12" in blade size, both compound and sliding-compound styles—to each stand. We then made a full range of bevel and miter cuts with each saw on each stand, testing for clearance and stability.

To check portability, we set up each model and moved it around in a small garage-size shop. Each stand was then torn down, loaded into a pickup, and set up in another shop across town while we noted any difficulties in setup and teardown.

Finally, we placed 8' lengths of 4×4 and 2×12 stock in cutting position on each workstation to check for deflection of the stock support system. And, on those models that offered fences and stops, we checked them for ease of use, adjustability, and reliability.

Where will it go, and where will it stow?

The first question to ask before buying a portable mitersaw stand is, "Where do I want to go?" For primarily in-shop use and occasional short trips into the house or backyard, consider one of the stands we call highly portable in our evaluations beginning *on page 69*; in these cases, the saw dismounts for storage and transport. The advantages: With the saw separate, the stand itself stores small. (Some can even stand on end in a corner, as shown in the photo at *far right.*) And smaller size means it can go where other types can't, including through narrow stairways. On the downside, you may need to make more than one trip to get the saw, stand, and accessories to where you're going. And you still need a place to store your saw.

If you can see yourself hauling saw and stand over hill and dale, your best bet is one of the moderately portable self-storing models—the saw remains attached to the stand throughout storage, setup, teardown, and transportation. In mobile mode, these two-wheel stands maneuver like a hand truck or wheelbarrow. But they store flat on their bellies, as shown at *near right*, so unless you can tuck one under a workbench, they don't save much floor space in the shop.

Finally, limited-mobility stands provide a full-time home for your saw, but aren't designed for trips up stairs or over rough terrain. These cart-like stands go from storage to ready-to-work position in literally seconds, making this type of stand our first choice in the workshop. These stands' chief disadvantage is that, even stored, they take up more room than their collapsible counterparts.

Assuming your saw already has a home, some stands, such as the DeWalt shown at right, can stow on end in a corner. Others, such as the Trojan above, store the saw and stand together.

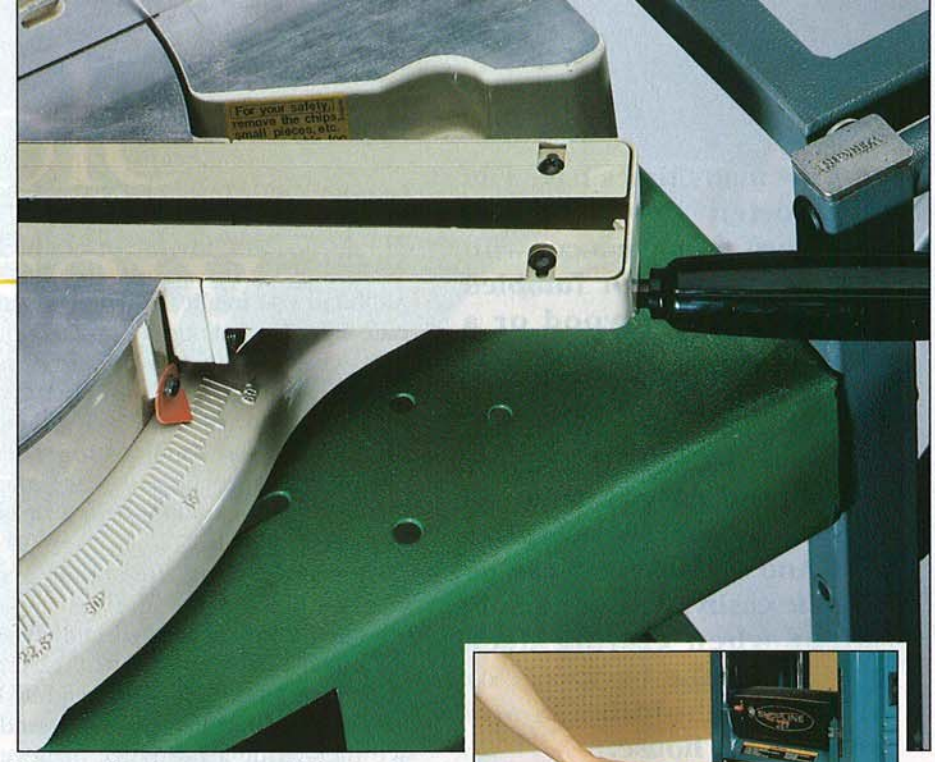
Continued

Portable Mitersaw Stands

The tools you use: Size does matter

In most cases, mounting the saw to the stand entails positioning the saw on a fixed or removable mounting plate, marking and drilling the plate, and bolting down the saw. Although all of the stands had plenty of room to mount and operate our 8¼" and 10" saws, the 12" sliding compound-miter-saw crowded the comfortable capacity of some (see photo at *right*). A couple of manufacturers offer special-size stands for big tools, so check the model-by-model breakdown beginning on the *opposite page* to see how each stand fares with larger saws.

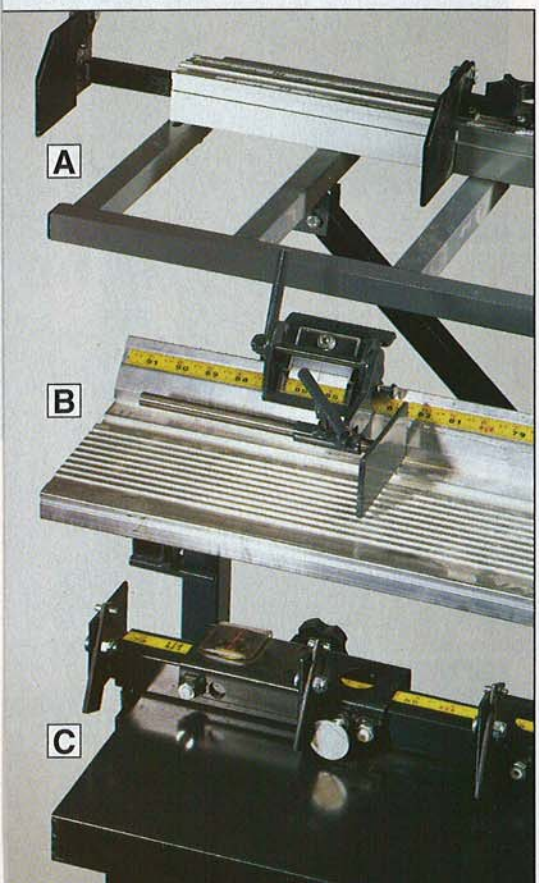
If you have (or are thinking of buying) other portable power tools, such as a planer or benchtop tablesaw, factor that into your stand-buying decision. The mounting plates and/or supports of some stands can be aligned to provide excellent infeed and outfeed support for these tools as well.



We could only squeeze 54° out of our Makita LS1211's 60° miter-cutting capacity when mounted on the Werkart. The saw's handle wouldn't clear the support.

Don't limit yourself to mitersaws when choosing a stand. Some, such as the Trojan shown, also will accommodate a portable planer or benchtop tablesaw.

A good stop system for accurate, repeatable cuts



To stand the old axiom on its head, we prefer a workstation that lets us measure once and saw as many times as we want. That kind of precise, repetitive cutting is possible only with a reliable length stop, three of which are shown at *left*. Frankly, we were surprised at the number of stands in our test that didn't offer a stop even as an option, so before you buy, decide how important that is to the way you'll use your stand.

Another consideration here is the mechanism by which each stand keeps the workpiece aligned with your saw's fence. A few stands have full-length fences to hold this alignment, while others provide a short backstop that registers the workpiece with the saw fence. We prefer the full-length fence, but a backstop is better than nothing at all.

Workstops come standard on the Rousseau (A) and Sawhelper (B) stands. You'll get HTC's triple-stop system (C) only with the optional support table.

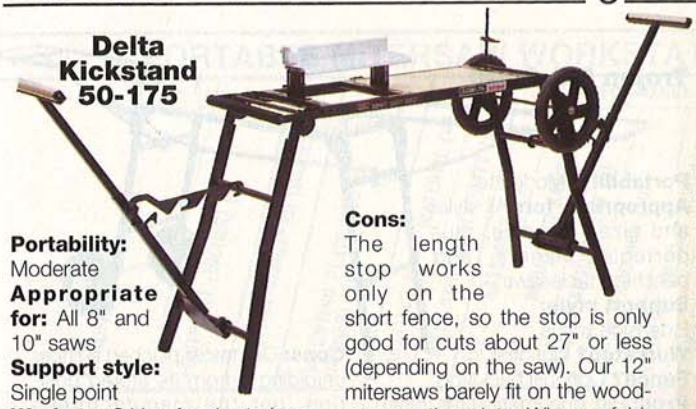
Two types of support, and why it matters

The many methods of workpiece support on these units can be separated into two basic styles: single-point supports, such as rollers and T-style supports, and extension wings. Single-point supports must be moved out for long pieces and in for shorter ones, and you'll find them on most of the highly-portable stands because they aren't bulky. However, some single-point supports, such as those on the Trend-Lines and Delta stands, must be reset to saw table-height at each setup.

For hassle-free support, though, we prefer extension wings. First off, the wings offer rock-solid support to virtually any length of workpiece up to the length of the wing. And, once you calibrate the wings to the level of your saw base during the initial assembly, they'll always be perfectly in line. You merely swing the wings into place and start cutting.

A look at our nine members in good standing

Delta Kickstand 50-175



Portability: Moderate
Appropriate for: All 8" and 10" saws
Support style: Single point
Workstop? Yes, for short pieces
Fence? Yes, for short pieces
Pros: The wide stance makes it a solid workstation. One feature unique to this stand is a small stock holddown on the right side of the stand that keeps offcut stock from tipping up into the saw when the cut is complete.

Cons: The length stop works only on the short fence, so the stop is only good for cuts about 27" or less (depending on the saw). Our 12" mitersaws barely fit on the wooden mounting plate. When unfolding the stand, one of the support arms flopped down and banged our tester's shin. Delta officials told us they will address the plate-size and support problems in future product modifications.
Options/accessories: Rear outfeed work support, $58.

Rousseau SS2875

Portability: Limited
Appropriate for: All 8" and 10" saws, portable planers, and benchtop tablesaws. For 12" mitersaws, get the wider SS2875XL.
Support style: Extension tables
Workstop? Yes **Fence?** Yes
Pros: This unit has everything we want in a shop mitersaw stand: four locking casters; a tubular aluminum fence with built-in tape measure; and two hefty flip stops, including one that extends to 36" beyond the length of the fence.
Cons: Small casters are no match for rough terrain, so keep it on smooth surfaces. With the smaller version we tested, we couldn't use our 12" sliding saw's full 60° miter capacity. If you need this kind of room, get the wider stand.
Options/accessories: Wheel kit (pair of 7" tires and axle), $49; right-hand stop system, $109; additional flip stops, $35 each.

DeWalt DW730

Portability: High
Appropriate for: All sizes and styles
Support style: Single point
Workstop? Yes
Fence? Backstop
Pros: Weighing in at only 35 pounds, you don't need to be built like Arnold Schwarzenegger to carry DeWalt's aluminum stand. Both the mounting plate and workstop can be positioned anywhere along the top rail, so DeWalt engineers designed a self-adjusting measuring system (shown *above*) that uses a standard 25' tape measure (not included) in the workstop.

To set the unit up, you merely fold down the legs and attach the saw. For short cutoffs, you don't even need to bother with the stand—just set the saw and plate on a flat work surface.
Cons: We found it a little tricky to slide the mounting plate into the track on the top rail.
Options/accessories: 30" extension rail, $70; 7' extension rail, $160; flip stop/work support, $45.

Sawhelper Ultrafence U85SET

Portability: High
Appropriate for: All sizes of mitersaws (12" saws may require larger wooden plate)
Support style: Extension wings
Workstop? Yes **Fence?** Yes
Pros: Its main strength lies in the fence/support system. Tempered-aluminum wings, 8' and 5', hang on a pair of brackets (shown *above*) that mount directly to the saw's base, making for effortless front-to-rear squaring (but the far ends still must be leveled). The flip stop easily recalibrates to the fence's built-in measuring tape if you switch saws.
Cons: Attaching the brackets may require modifying your saw. The manufacturer notes that the bases of the Makita LS1013 and DeWalt 708 must be drilled to attach the brackets; others may require cutting away part of the fence or grinding ridges off the sides. Yikes!

The narrow spread of the legs made us fear that both stand and saw might tip over backwards if we let any saw's motor housing spring up too fast. And the Sawhelper travels in at least three heavy pieces: the folding saw stand, the saw and mounting plate, and one or two fences.
Options/accessories: Available with two 8' fences for $290, or with one 5' and one 9'4" fence for $310; 24" fence, $30.

HTC Port-A-Mate HP-500

Portability: High
Support style: Single-point
Workstop: Optional
Fence: Optional backstop
Pros: At 145", Port-A-Mate's total wingspan is the second longest in our test. It comes with a roller support, T-style support, and a workstop that could double as a support. However, we were more impressed with the optional extension table with three flip stops.
Cons: The workstop is part of the outboard leg (shown at far right in the photo), so you have to move the whole leg to adjust the length of the stop. Another nuisance: The saw must be unbolted from the mounting plate for storage, so plan to leave it set up most of the time. While most stands come at least partially assembled, the Port-A-Mate arrives in bags of knobs, nuts, and bolts. But good instructions kept our assembly time down to about 45 minutes.
Options/accessories: Quick-Stop System (extension table) for left or right, $160; 10" roller support, $19; extra mounting plate (for additional tools), $25.

Continued

Portable Mitersaw Stands

Stablemate RWC-36

Portability: High
Appropriate for: All sizes and styles of mitersaws (12" saws may require adding a wooden plate)
Support style: Single point
Workstop? No
Fence? No
Pros: This lightweight stand sets up in a snap: Unfold the legs, mount the saw, and you're ready to make sawdust. The saw attaches directly to a pair of mounting clamps that in turn ride on the stands twin rails (see *inset*). A crank on each clamp makes short work of attaching the saw. And, once the fixed tubular supports are aligned with your saw, you'll never have to adjust them again.

Cons: This stand's major drawbacks are the lack of any kind of fence or stop and the inability to clamp even a makeshift stop to it. The mounting clamps can be too short for some larger saws. But for our 12" sliding compound mitersaw, we simply bolted a plywood plate to the saw, then attached the plate to the clamps. We recommend adding a plate for any sliding saw with three-point mounting.
Options/accessories: Additional pair of mounting clamps, $30.

Trendlines DD85SET

Portability: Moderate
Appropriate for: All 8" and 10" saws
Support style: Single point
Workstop? No
Fence? No
Pros: As tested with its aluminum beam, it's already the least expensive stand in our test. But, for $10 less, you can buy the stand hardware alone (DD85) and mount it to whatever length of 2× stock you like, allowing you to work longer stock than we could with the beam.
Cons: When folded for transport, the short axle makes the stand difficult to handle on rough terrain. Even when rolling or resting on hard, smooth surfaces, we found it unbalanced, especially with a 12" saw mounted (*inset*). This feeling persisted in use, with loose hardware tolerances giving the stand an overall wobbly feeling. The stand arrives completely unassembled, with only an exploded view diagram to guide assembly.
Options/accessories: None

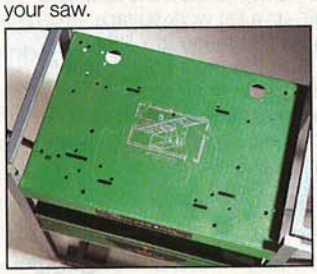
Trojan MS-2000

Portability: Moderate
Appropriate for: All styles and sizes of saws, plus portable planers and benchtop tablesaws
Support style: Extension wings
Workstop? Optional
Fence? Optional backstop
Pros: Big pneumatic tires make this the easiest-rolling stand in our test over any terrain, including stairs. Its wide mounting plate left room to spare around the largest saws, and rollers on either side of the plate give good support to moving stock when used with a planer or benchtop tablesaw.

Cons: Our tester pinched a finger unfolding it from its stored position (not the manufacturer's fault—they put clear instructions right there on the stand). The optional workstop fastens to an extension table crossmember—it's a bit crude, but quite effective.
Options/accessories: Workstop, $25; MS-2000X extension wing, $95.

Werkart WA152

Portability: Limited
Appropriate for: All styles of 8" and 10" saws, most 12" mitersaws, plus portable planers and benchtop tablesaws
Support style: Extension tables
Workstop? No **Fence?** No
Pros: The burly Werkart offers more than just a place to stash your saw. It also has a drawer and slotted storage area for wrenches, blades, or whatever you'd like to keep handy. The saw-mounting surface comes predrilled for most saws (see *inset*) and includes a map to show you which holes to use for your saw.



Cons: Like the Rousseau, this stand prevented us from taking full advantage of our Makita LS1211 12" sliding compound mitersaw's 60° miter capacity. A Werkart representative told us the problem is specific to this model of saw, and recommended we loosen one mounting bolt and remove the other, then swing the saw to get enough clearance to make the 60° cut. Also, with only a pair of wheels, positioning the stand felt a lot like parallel parking.
Options/accessories: Full bottom shelf, $26; flip-down wheel, $42; water-repellent cover, $59.

Stripped down (but solid) support at a bargain price

Take away the bells and whistles from any one of these stands and you realize its basic function is to support stock while you saw. If you're on a budget, and you already own a clamping workstation, such as Black & Decker's Workmate, check out the MiterMate.

Clamp the tubular steel body of the MiterMate between the workstation's jaws, and mount your saw over the top of it as shown at *right*. Extend the telescoping support tube up to 31" from one end of the body, set the height of the T-style support, and you're in business.

For basic stock support, Trojan's MiterMate is just the ticket. And, with an expected price tag of about $30, you simply can't go wrong.

PORTABLE MITERSAW WORKSTATIONS: THE FINAL STANDINGS

MANUFACTURER/MODEL	FOOTPRINT (INCHES) (1)	MAXIMUM WINGSPAN (INCHES) (2)	MOUNTING PLATE SIZE (INCHES) (3)	MOUNTING PLATE MATERIAL (4)	LENGTH-STOP AVAILABILITY (5)	PERFORMANCE EVALUATION (6) EASE OF ASSEMBLY (7)	EASE OF MOUNTING SAWS (8)	EASE OF ADJUSTMENT (9)	SET-UP/TEARDOWN (10)	STABILITY ON FLAT SURFACE	STABILITY ON TERRAIN	IN-SHOP MOVEMENT	PORTABILITY	WORKSTOPS, EASE OF USE	WEIGHT (POUNDS, WITHOUT SAW)	COUNTRY OF MANUFACTURE (11)	WARRANTY (12)	SELLING PRICE	COMMENTS
DELTA Kickstand 50-175	21 x 67	112	21 x 13¾	PB	I	G	G*	G	G*	E	E	G	E	G	63	U	2 yr.	$180	Reasonably priced stand good for hauling over rough terrain.
DEWALT DW730	33 x 90	84	30 x 15	MCP	I	E	E	E	E	E	E	G	G	E	35	U	1 yr.*	280	Wheel-less, but lightweight and easy to move. For more capacity add a 30" extension for $70.
HTC Port-A-Mate HP-500	24 x 39½	145	26 x 18¾	MCP	I	G	F*	G	F**	G	G	F	F	F	56	U	2 yr.	170	Solid stand with good capacity, but saw must be unbolted to store, which is a nuisance.
ROUSSEAU SS2875	16 x 31¾	102	27 x 15¼	SS	I	F	G*	G	E	E	G	E	G	E	72	U	Life	289	Our favorite in-shop stand. Roll it out of storage and it's ready to work in seconds. For big sliders, get the 9" wider SS2875XL for $20 more.
SAWHELPER Ultrafence	24 x 24	156	23½ x 14¾	OSB	I	F	F*	F	F	G	G	F	G	E	78	U	Life	390	Well-designed fence system that may require saw modifications to mount. The stand itself seems like an afterthought.
STABLEMATE RWC-36	22 x 71	71	* x 18	*	N	G	G**	G	E	G	G	G	G	--	41	U	1 yr.	109	A poor man's DeWalt with certain limitations.
TRENDLINES DD85SET	26 x 68	52	24 x 16	MCP	N	F	E	G	F	F	F	F	F	--	54	T	1 yr.	100	Loose tolerances make this stand feel rickety in use. Short axle doesn't ride well over terrain and makes the stand tippy during transport.
TROJAN MS-2000	24 x 60	156	39½ x 16	MDF	O	E	E	E	E	E	E	E	E	G	67	U	1 yr.**	299	Wide pneumatic tires and a quick setup make this our top pick for out-of-shop use.
WERKART WA152	18½ x 35	132	27 x 18½	SS	N	E	G*	G	E	E	G	E	G	--	70	C	1 yr.	227	A solid performer with flip-up extension wings that set up in seconds. Comes pre-drilled for mounting most saws.

NOTES:

1. Floor space required by stand in ready-to-use position, without wings extended
2. Distance between fully extended supports
3. (*) No plate provided, mounts attach to saw base
4. (MCP) Melamine-coated particleboard
   (MDF) Medium-density fiberboard
   (OSB) Oriented-strand board
   (PB) Particleboard
   (SS) Stamped steel
   (*) Saw bolts directly to mounts, or user can add own plate.
5. (I) Included
   (N) Not included
   (O) Optional
6. E Excellent F Fair G Good P Poor
7. Does not include mounting of saw.
8. (*) 12" saws require careful mounting due to small plate.
   (**) User-supplied sub-base required for some saws.
9. Includes initial adjustment and setting support parallel with saw.
10. (*) Downgraded for work support banging on shin during setup.
    (**) Downgraded for having to unbolt saw for teardown.
11. (C) Republic of China
    (U) United States
    (T) Taiwan
12. (*) 1 yr. service; 30 days parts and labor
    (**) Lifetime warranty on welds

FOR MORE INFORMATION, CALL:

Delta
800/223-7278

DeWalt
800/433-9258

HTC
800/624-2027

Rousseau
800/635-3416

Sawhelper
(Made by American Design & Engineering)
800/441-1388

Stablemate
(Made by Iowa Manufacturing)
800/882-4422

Trendlines
800/877-7899

Trojan
800/745-2120

Werkart
800/515-1551

The tests are done, so it's time for us to take a stand

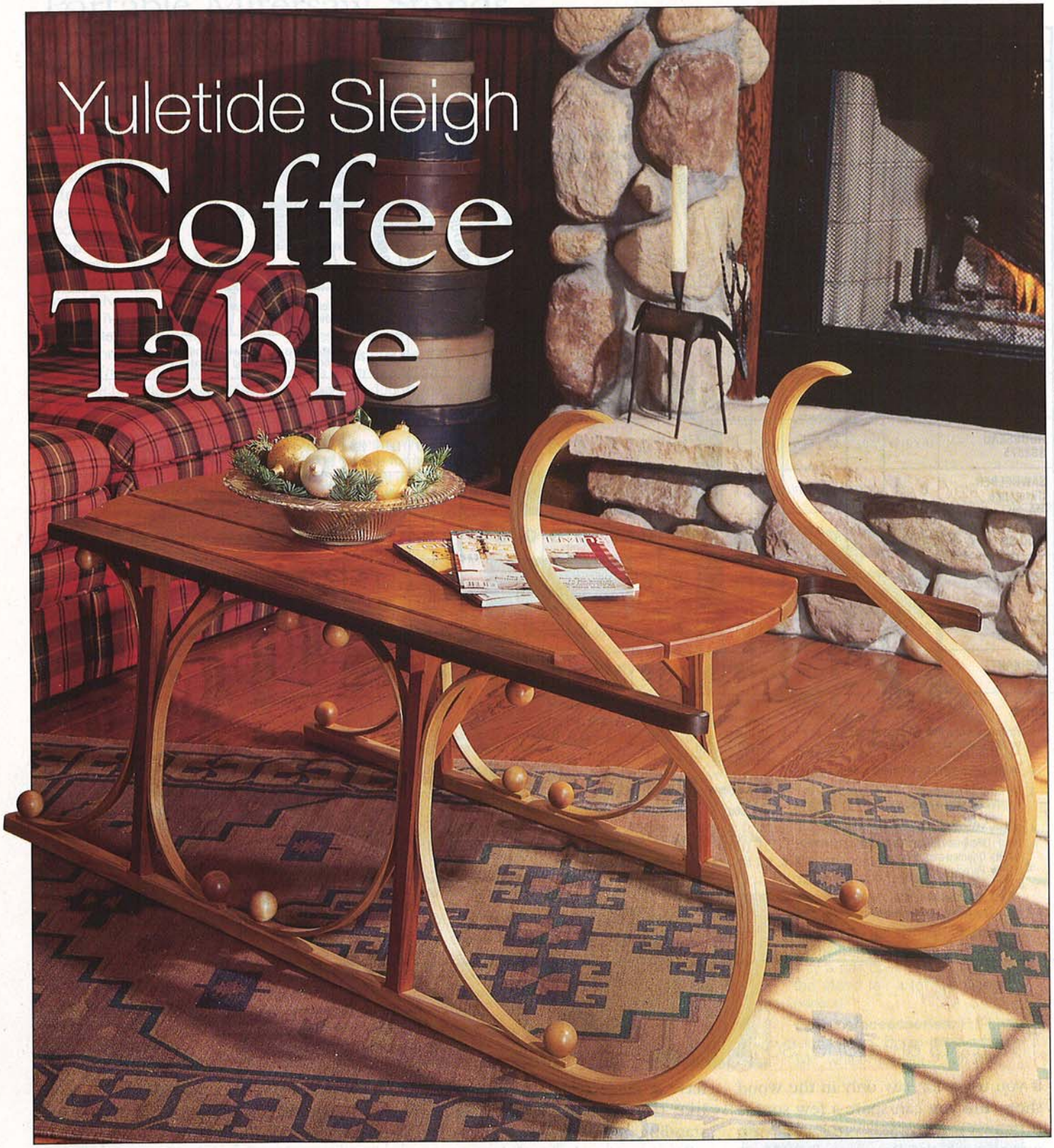
If you use your saw only in the wood shop, and you can spare a few square feet of floor space, you can't go wrong with the **Rousseau SS2875**. It provides a permanent home for your saw that's never more than a few seconds from being fully set up. Add in the fence, flip stops, and its multi-tool capability, and you've got a versatile shop helper. If storage space is at an absolute premium and you already have a place to store your saw, we like the **DeWalt**, which can store standing up in a corner.

For occasional out-of-shop use, we like both the **Trojan** and the DeWalt, but for different reasons. Trojan's big 13' wingspan, versatility, and ability to collapse into one easy-riding unit make it attractive for the long haul. But, as we mentioned, the DeWalt goes into tight areas with no problem.

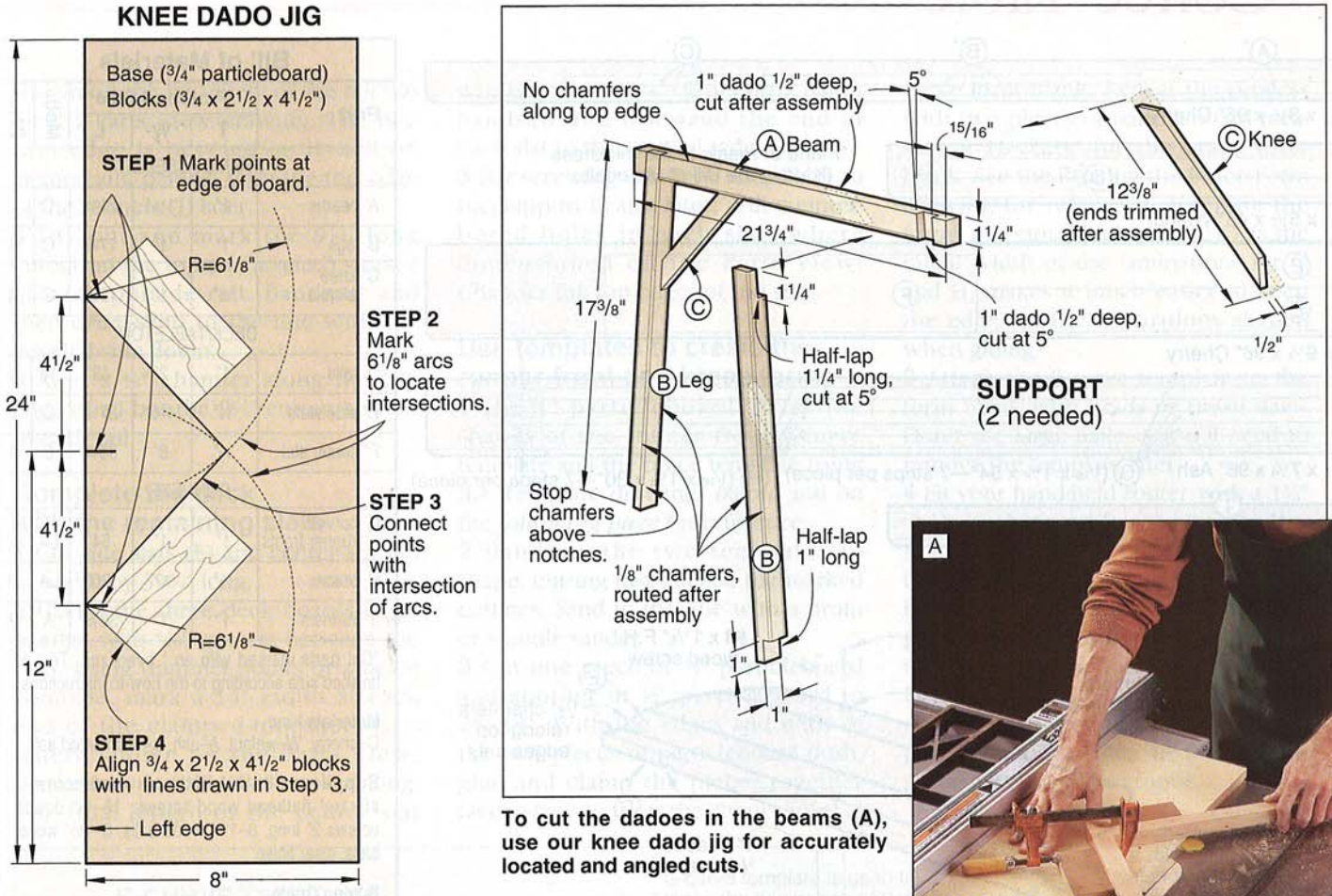
Whether you're working in-shop or out, the **Stablemate** gets our vote as the best value. Although it's not as stout or pretty as the DeWalt and doesn't have a workstop, it sets up quickly and can go everywhere the DeWalt stand goes for about one-third the price.

Written by Dave Campbell
Technical consultant: Dave Henderson
Photographs: Baldwin Photography

Yuletide Sleigh Coffee Table



With styling reminiscent of Victorian-era horse-drawn sleighs, this finely crafted showpiece will draw rave reviews. We wrapped thin ash strips around shop-built bending forms to laminate the shapely runners. Choose stock to match your existing woodwork, or use our striking cherry/walnut/ash combination. And be sure to keep your bending forms on hand. You'll be getting requests to build more of these beauties.



To cut the dadoes in the beams (A), use our knee dado jig for accurately located and angled cuts.

Construct a pair of supports to start the construction

1 Plane five-quarter (1 1/16") cherry to 1" thick or laminate thinner stock to form 1" stock for the beams (A) and legs (B) to form a pair of supports (A, B). Cut the beams and legs to size.

2 Cut the 5°-angled dadoes in the ends of the cherry beams (A) and the 5°-angled half-laps in the mating ends of the legs (B). Then, cut the straight 1"-long half-laps on the bottom outside face of the legs (B). See the Parts View drawing on the *WOOD PATTERNS®* insert in the middle of the magazine for reference.

3 Glue and clamp the angled half-laps in the ends of the legs into the angled dadoes in the beams. See the Support drawing for reference. Trim and sand the protruding ends of the legs flush with the top surfaces of the beams.

4 Construct the jig shown on the Knee Dado Jig drawing *above*.

5 Fit your tablesaw with a 3/4" dado blade, and position the rip fence so the right side of the dado blade is flush or just grazes the left edge of the jig base as shown in *Photo A at right*. Adjust the dado blade to cut 1/2" above the surface of the jig base.

6 As shown in *Photo A*, clamp a support (A, B) to the knee dado jig, and cut a dado, angled through two of the adjoining pieces. Repeat the cut on the remaining corners of the two supports. Now, reposition the rip fence, and make a second pass to widen the dadoes to 1" (width of the legs).

7 Cut the knees (C) to fit the dadoes plus 1" in length.

8 Glue and clamp the knees (C) into the dadoes. Later, trim and sand the protruding ends of the knees flush with the outside edges of the beams and legs. Finish-sand both supports.

9 Rout 1/8" chamfers along the edges of the supports where shown on the Support and Exploded View drawings. Stop the chamfers where the half laps in the bottom ends of the legs will fit into the runners later. There's also no chamfer along the top edges of the beams (A).

Start the deck/tabletop with the outside rails

1 Cut the outside deck rails (D) to size. Cut 1" dadoes 1/4" deep on the bottom surface of each rail, where dimensioned on the Parts View drawing on the pattern insert and shown on the Exploded View drawing.

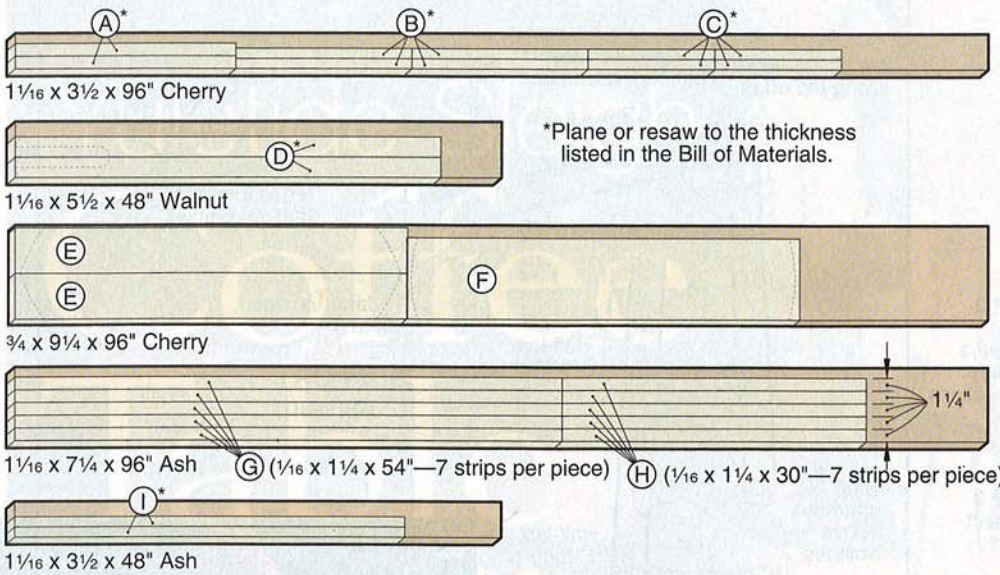
2 For screwing the rails to the support beams (A) later, drill counterbored mounting holes in each rail, where dimensioned on the Parts View.

3 Mark and cut the 1" radius on the front outside corner of each rail (D). Note that you're making a pair of rails, and that one rail is a mirror image of the other rail.

4 Bevel-rip (we used the tablesaw) the bottom edge of both rails, where

Continued

Coffee Table


A*
B*
C*
1 1/16 x 3 1/2 x 96" Cherry
D*
1 1/16 x 5 1/2 x 48" Walnut
E
E
F
3/4 x 9 1/4 x 96" Cherry
1 1/4"
1 1/16 x 7 1/4 x 96" Ash
G (1/16 x 1 1/4 x 54"—7 strips per piece)
H (1/16 x 1 1/4 x 30"—7 strips per piece)
I*
1 1/16 x 3 1/2 x 48" Ash

*Plane or resaw to the thickness listed in the Bill of Materials.

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
FRAME ASSEMBLY					
A beams	1"	1¼"	21¾"	C	2
B legs	1"	1"	17⅜"	C	4
C* knee blanks	½"	1"	12⅜"	C	4
DECK/TABLETOP					
D rails	1"	2"	42"	W	2
E* side slats	¾"	4½"	37½"	C	2
F* center slat	¾"	8"	38¾"	C	1
RUNNERS					
G curved runner fronts	1"	1"	54"	LA	2
H braces	¼"	¾"	30"	LA	8
I runners	1"	1"	38½"	A	2

*Cut parts marked with an * oversized. Trim to finished size according to the how-to instructions.

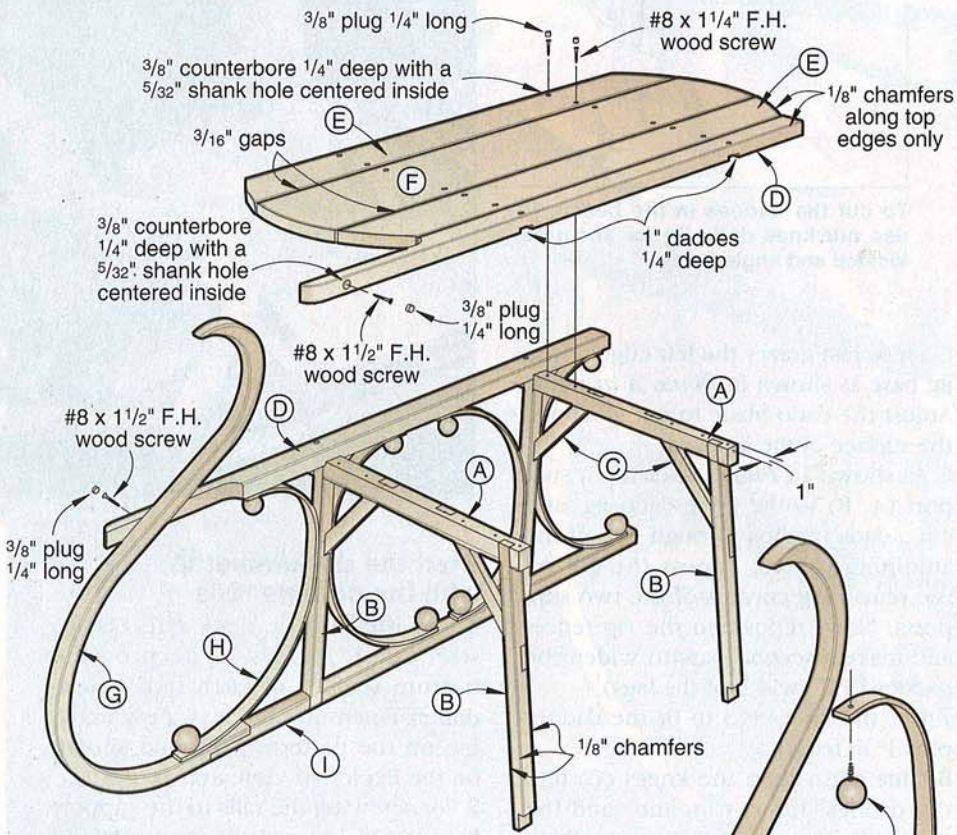
Materials Key:
C–cherry, W–walnut, A–ash, LA–laminated ash.

Supplies: #8×1¼" flathead wood screws, #8×1½" flathead wood screws, 16–¼" dowel screws 2" long, 8–1¼" wood balls, 8–1½" wood balls, clear finish.

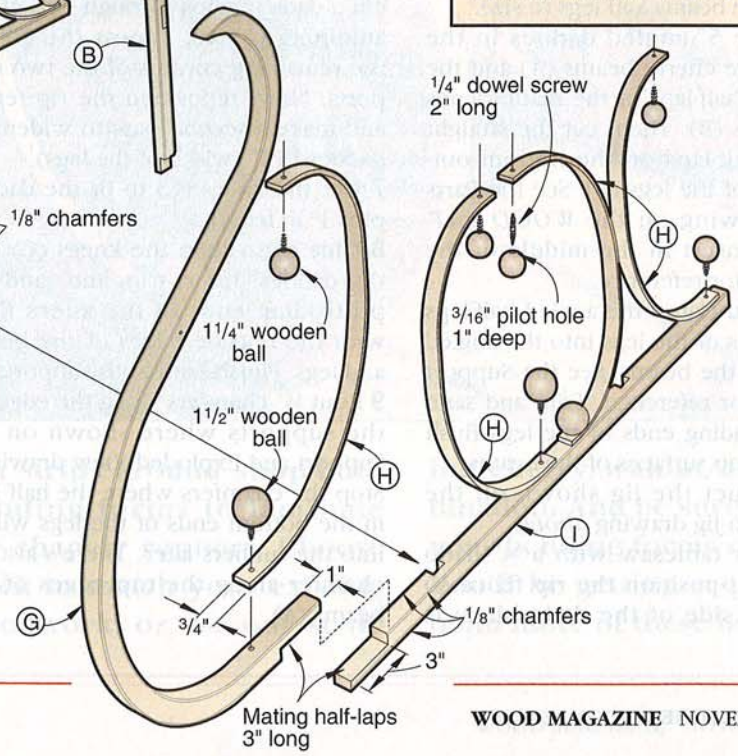
Buying Guide

Hardwood kit. All the individual pieces shown on the Cutting Diagram cut slightly oversized from the thickness and species listed in the Bill of Materials. This includes the ash being resawn into the necessary 1/16" strips. Plus, 8–1¼" wooden balls, 8–1½" wooden balls, and 16–¼" dowel screws 2" long. Kit no. W118, $199.95 ppd. Heritage Building Specialties, Fergus Falls, MN 56537. Or, call 800/524-4184 to order.

CUTTING DIAGRAM



EXPLODED VIEW



SEE THE *WOOD PATTERNS®* INSERT FOR FULL-SIZE PATTERNS AND PARTS VIEW DRAWINGS

shown on the End View of the rail (D) on the Parts View drawing. The bottom edge is beveled so it will be aligned and parallel with the top edge of the runners (I) later.

5 Lay out and mark the 9¼"-long cutout on the top (unbeveled) surface of each outside rail. Bandsaw and then drum-sand to the line with the beveled side down.

6 Rout a ⅛" chamfer along the top edge of all but the 9¼" cutout section of each rail.

Complete the deck with the remaining slats

1 Cut side slats (E) and center slat (F) to width by 39¾" long.

2 Clamp the three deck boards edge-to-edge with 3/16" spacers between the slats. Using trammel points or a beam compass, mark a 14" radius at each end of the clamped-together slats, where shown on the Parts View. Remember that the slats are cut long. The final length of the center slat needs to be 38¾". Unclamp, then bandsaw and disc-sand the end of each slat to the marked radius.

3 For screwing the deck slats (E, F) to the support beams later, drill counterbored holes in each slat, where dimensioned on the Parts View. Chamfer the top edges of the slats.

Use templates to create the runner-front and brace forms

1 On ¾" particleboard, mark the shapes of the runner front S-curve template and the brace template using the Template drawings *below* and on the *following page* for reference.

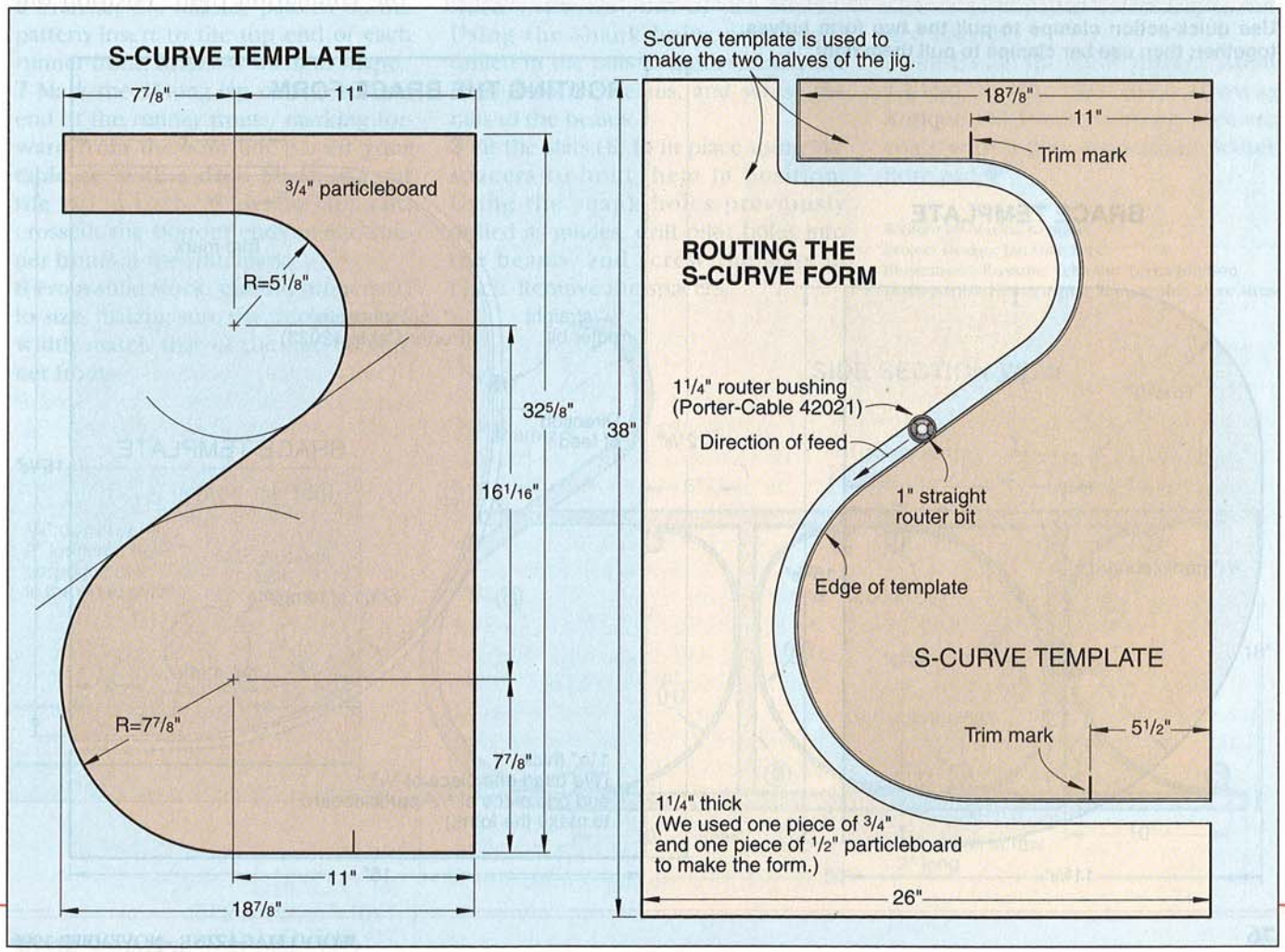
2 Bandsaw the two templates to shape, cutting just outside the marked cutlines. Sand to the line with a drum or spindle sander.

3 Cut one piece of ¾" particleboard and another of ½" particleboard to 26×38". With the edges and ends of the two pieces of particleboard flush, glue and clamp the pieces together face-to-face to form the runner front S-curve form blank. Repeat the process with two pieces of particleboard measuring 16×22⅛" for the brace form blank. See the Routing the Brace Form drawing for reference. Keeping the forms the same thickness (1¼") as the initial width of the laminations for G and H, makes it much easier to keep the edges of the laminations aligned when gluing.

3 Attach the S-curve template to the form blank with brads or finish nails. Don't use large nails as you'll need to remove the template later.

4 Fit your hand-held router with a 1¼" O.D. bushing and a 1" straight bit. Adjust the depth to cut about ⅛" into the form blank. Now, with the bushing riding against the edge of the template, rout a 1" groove in the blank as illustrated on the Routing the S-Curve Form drawing *below*. Repeat this operation, lowering the bit ⅛" each pass until about ¼" of the blank is left at the bottom of the groove.

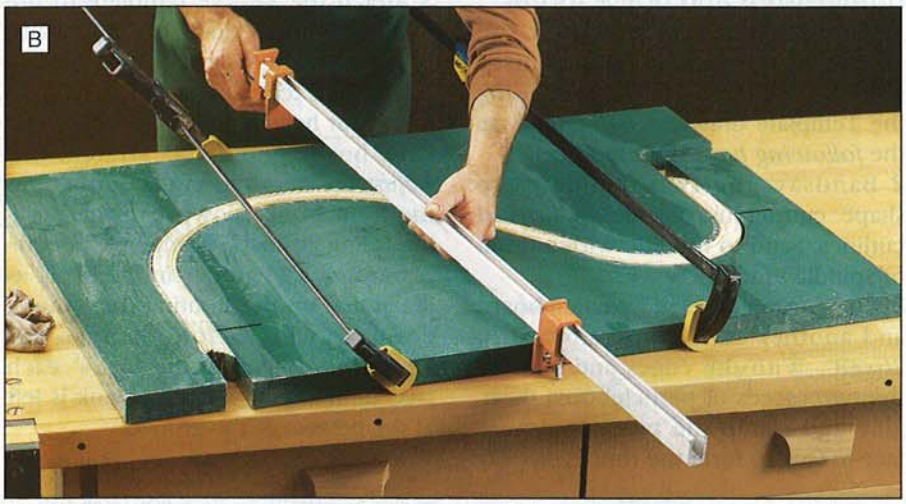
Continued



5 Remove the S-curve template from the jig blank, and use a jigsaw to cut down the center of the groove, separating the two halves of the blank. Now, install a flush-trim bit in a handheld router, and rout the ¼"-thick edges flush with the previously routed faces of the form halves.

6 Repeat the routing and cutting process with the brace form blank and template, using a ½" guide bushing and a ¼" straight bit.

7 Transfer the locations of the trim marks to the particleboard forms. Apply a couple coats of varnish to seal the wood and prevent the glue from sticking to the forms later. (We also adhered 2"-wide plastic packing tape to the mating edges of the forms for further insurance.)

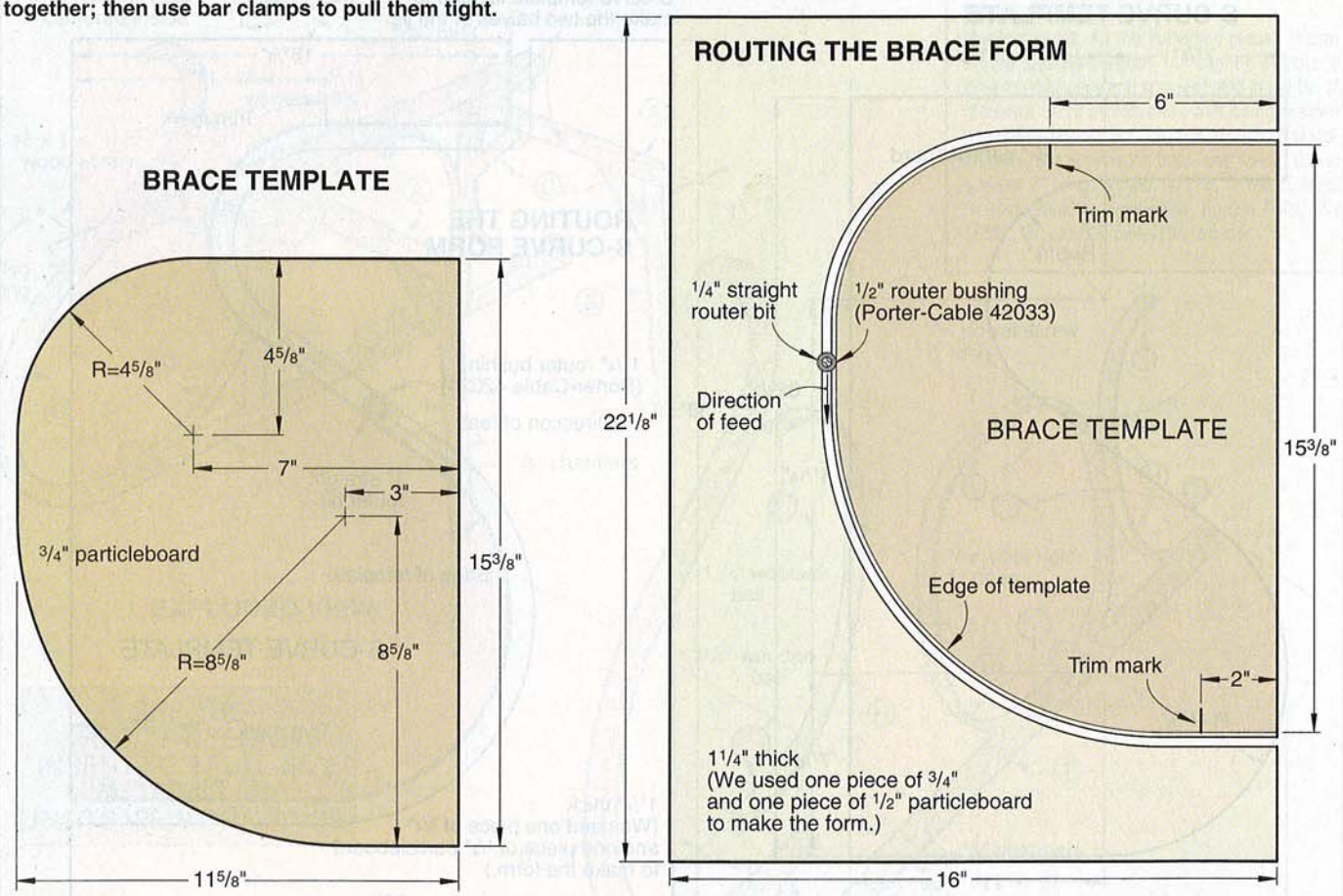


Use quick-action clamps to pull the two form halves together; then use bar clamps to pull them tight.

Laminate thin strips to create the runner fronts and braces

1 From straight-grain ash, bandsaw 32 strips measuring 1/16×1¼×54" for the curved runner fronts (G), and 32 strips measuring 1/16×1¼×30" for the braces (H). Keep the strips in order as you saw them to get the best color and grain match in the finished laminations. For reference, see our Resaw Technique article in the November 1998 issue of *WOOD* magazine.

2 Glue and clamp *just enough strips between the two S-curve form pieces to create a 1"-thick runner front (G). If your lamination is thicker than 1" delete strips as necessary.* (We used white glue for a longer working time.) Draw the form halves together with quick-action clamps, making sure the ends of the laminations are beyond the trim marks on the form as shown in *Photo B.* While quick-action clamps work great for pulling the form halves together, you'll need to add bar clamps to get enough pressure to pull the lamination tight. Position one



clamp across the ends of the forms (perpendicular to the other clamps) to counteract the tendency of the form halves to spread slightly. Let the lamination dry for 24 hours before repeating with the other runner front.

3 Hand-plane and sand flat *one edge* of one of the curved runner fronts. Position your bandsaw fence 1" from the blade. Running the planed (flat) edge of the curved runner front against the fence, bandsaw the curved runner front to 1" wide. Repeat for the second runner front.

4 Place the runner front back on the form. Transfer the trim marks from the form onto the runner. *Do not* trim the ends of the runner front yet. The extra length on the bottom will help keep the lamination flat on the tablesaw when cutting the 3" laps later.

5 Repeat the process in Steps 1-4 above to form the eight braces (H). Bandsaw the braces to ¾" wide. Trim the ends of the braces where marked. Sand smooth.

6 Transfer the full-size pattern on the pattern insert to the top end of each runner front. Bandsaw them to shape.

7 Mark the 3"-long lap on the bottom end of the runner fronts, marking forward from the trim line 3". Fit your tablesaw with a dado blade and cut the lap in each. With the laps cut, crosscut the bottom ends of the runner fronts at the trim mark.

8 From solid stock, cut the runners (I) to size, making sure the thickness and width match that of the curved runner fronts.

9 Cut a mating lap on the front end of each runner. Then, cut dadoes on the inside face of each runner, where dimensioned on the Parts View drawing. The spacing between the dadoes must match the spacing between the dadoes in the rails (D).

10 Glue and clamp the curved runner fronts (G) to the straight runners (I). Later, sand the joint smooth, and sand the bandsaw marks off the runner (G/I) sides.

11 Rout a chamfer along all the edges of each runner (G/I), stopping at the dadoes for capturing the legs (B) later.

Final assembly: It's all downhill from here

1 Glue and clamp the rabbeted ends of the supports (A, B, C) into the dadoes in the runners (G/I), keeping the supports perpendicular to the runners. Complete routing the chamfers where the runners meet the legs.

2 Fit the beams (A) into dadoes in the rails (D), and clamp the rails in place flush with the ends of the beams. Using the shank holes previously drilled in the rails as guides, drill pilot holes into the beams, and screw the rails to the beams.

3 Fit the slats (E, F) in place using 3/16" spacers to hold them in position. Using the shank holes previously drilled as guides, drill pilot holes into the beams, and screw the slats in place. Remove the spacers.

4 Clamp the curved runner fronts to the rails (D) where they cross. Check that the runner fronts cross both rails the same distance back from the front end of each rail. Drill counterbored holes in the rails, and screw them to the curved runner fronts.

5 Plug the holes in the rails (D) and slats (E, F). Later, sand the plugs flush.

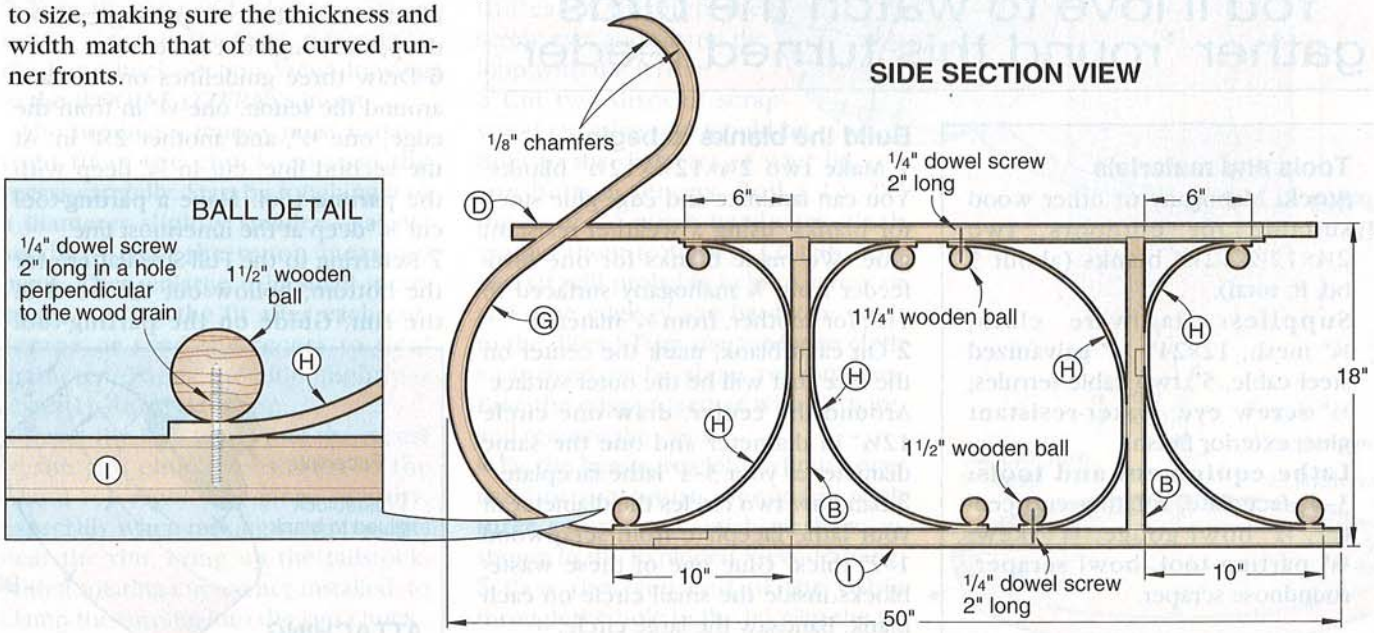
6 Glue and clamp the braces (H) in place, where shown on the Side Section View drawing.

7 One at a time, clamp a 1½" wood ball in a handscrew clamp, and drill a 3/16" pilot hole 1" deep, centered in each ball. Drill the holes perpendicular to the grain. See the Ball detail accompanying the Side Section View for reference. Do eight total. Switch to 1¼" balls and drill pilot holes in eight of them. Thread a ¼" dowel screw 2" long into the pilot hole in each ball.

8 Drill pilot and shank holes through the braces (H) and into the runners (I) and rails (D). Thread the dowel screws (with balls attached) to the sled assembly.

9 Finish-sand the entire project. Apply a clear finish. (We used Minwax Antique Oil Finish, rubbing between coats with a gray (superfine) Scotch Brite pad.

Written by Marlen Kemmet
Project Design: Jan Hale Svec
Illustrations: Roxanne LeMoine; Lorna Johnson
Photographs: Hetherington Photogrphy; Steve Struse



Birdy Bistro

You'll love to watch the birds gather 'round this turned feeder

Tools and materials

Stock: Mahogany or other wood suitable for outdoors, two 2¼×12½×12½" blanks (about 5 bd. ft. total).

Supplies: Hardware cloth, ¼" mesh, 12×24"; ⅛" galvanized steel cable, 5'; two cable ferrules; ½" screw eye; water-resistant glue; exterior finish.

Lathe equipment and tools: 3-4" faceplate, rotating cup center, ½" bowl gouge, ¾" skew, ⅛" parting tool, bowl scraper, roundnose scraper.

Build the blanks to begin

1 Make two 2¼×12½×12½" blanks. You can laminate and edge-glue stock for blanks, using a weather-resistant glue. We made blanks for one birdfeeder from ⅝ mahogany surfaced to 1⅛"; for another, from ¾" material.

2 On each blank, mark the center on the face that will be the outer surface. Around the center, draw one circle 12½" in diameter and one the same diameter as your 3-4" lathe faceplate.

3 Bandsaw two circles the diameter of your lathe faceplate from scrapwood 1-2" thick. Glue one of these wasteblocks inside the small circle on each blank. Bandsaw the large circle.

Start turning with tenons on the top and bottom

1 Attach the lathe faceplate to the wasteblock on the lid blank, using 1" screws. (See the Attaching the Faceplate to the Blank drawing.) Mount the assembly on your lathe.

2 Round the blank to 11¾", and true the edge and face. Referring to the Birdfeeder Lid Full-Size Pattern in the *WOOD PATTERNS®* insert, form a 6"-diameter tenon ½" long on the face.

To do this, hold a pencil point against the surface 3" from the center while the lathe runs. Next, cut in ½" deep with a parting tool just outside this guideline. Make another ½"-deep parting-tool cut midway between that one and the edge.

Then, using a bowl gouge, cut away the waste between the edge and the tenon. With a skew, turn the roughed-out tenon to finished diameter, forming a slight taper as shown.

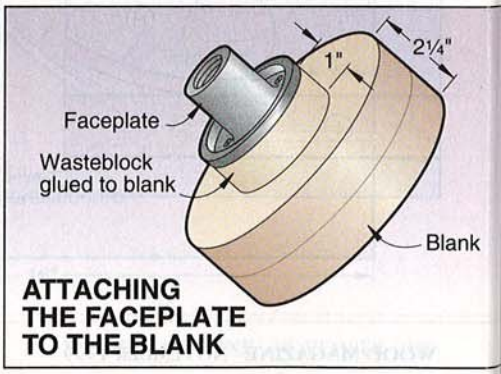
3 Sand the face smooth, using 100- and 120-grit sandpaper. When sanding the side of the tenon, don't take too much off. Remove what waste you can from the outer part of the other side; then dismount the turning, and remove the faceplate from it.

4 Attach the faceplate to the wasteblock on the second blank, and mount it on the lathe. Turn the blank to 12" diameter.

5 As on the lid blank, lay out a 6"-diameter tenon on this bottom blank. Make the two parting cuts ¾" deep, and rough out the tenon.

6 Draw three guidelines on the face around the tenon, one ¼" in from the edge, one ½", and another 2¾" in. At the second line, cut in ¼" deep with the parting tool. Make a parting-tool cut ⅝" deep at the innermost line.

7 Referring to the Full-Size Pattern for the bottom, hollow out the bowl of the rim. Guide on the parting-tool



ATTACHING THE FACEPLATE TO THE BLANK

cuts to establish the depth. Curve the bottom of the tenon so it flows into the bowl, as shown.

8 Turn the tenon to finished diameter, which should be the same as the largest diameter of the lid's tenon. For precise sizing, you can scrape or sand the tenon to final diameter.

(You'll mount the lid and bottom for turning the other side by inserting the tenon into a jam chuck. The more uniformly they're sized, the easier it will be to turn both with one jam chuck.)

9 Mount a Jacobs-type drill chuck on the lathe tailstock. Chuck a ⅛" twist drill in it, and drill ½" deep at the center of the tenon. If you don't have a drill chuck for the lathe, mark the center after sanding, and drill the hole with a drill press when convenient.

10 Draw a guideline around the side of the tenon, ¼" below the top edge. Form the sloped top of the tenon between the center and the guideline.

11 Sand the rim bowl and tenon smooth. Again, don't take too much off the tenon. Dismount the turning, and remove the faceplate from it.

12 On a drill press, drill four equally spaced ¼" holes in the lowest part of the bowl, as indicated on the pattern.

Make a wooden jam chuck, and turn the outer surfaces

1 Bandsaw an 8" disc of 1½-2"-thick scrapwood. Center the faceplate on one side, and mount it on the lathe.

2 Turn the face and edge true. Then form a recess in the front, referring to the Jam Chuck Section View drawing in the *WOOD PATTERNS®* insert.

The turnings's tenons must make a tight fit in the chuck, so turn the recess carefully. Start by roughing it to a diameter slightly smaller—say ⅛" smaller—than the tenon measurement. Then enlarge it in small increments, testing the fit after each cut. Scrape or sand the recess to final diameter. Taper the side slightly—about 1°—for a tight grip.

3 Insert the lid's tenon into the recess in the jam chuck, as shown in the photo *top right*. For more security, especially when making roughing cuts near the rim, bring up the tailstock, with a rotating cup center installed, to clamp the turning into the jam chuck.

4 Mark the edge of the turning to indicate the thickness at the rim. On the face of the turnings, measure 3" out from the center, and cut in ⅝" deep with the parting tool. Form the curve between the rim mark and the parting-tool cut.

5 Next, part off the wasteblock. Then turn the top of the lid to shape. Slope the surface surrounding the dome slightly so water won't stand on it.

6 Mount a drill chuck on the tailstock. Chuck a 3⁄16" twist drill in it, and drill through the center of the lid. If you don't have a drill chuck, mark the center on the lid after sanding, and drill the hole later with a drill press.

7 Sand the turning with 100- and 120-grit sandpaper. For best appearance on the outer faces, turn off the lathe after you sand with each grit, and sand with the grain. Remove the turning from the jam chuck.

8 Chuck the bottom, and turn it to shape, following the same general procedure. Sand the bottom.

Wrap a wire cylinder, and put the feeder together

1 Apply a clear exterior finish to the turnings. (We brushed on Penofin, an oil finish.)

2 Install a screw eye in the hole in the bottom tenon. Slip a ferrule 2" or 3" onto one end of a piece of ⅛" steel cable. Loop the end of the cable through the screw eye, and secure the loop with the ferrule.

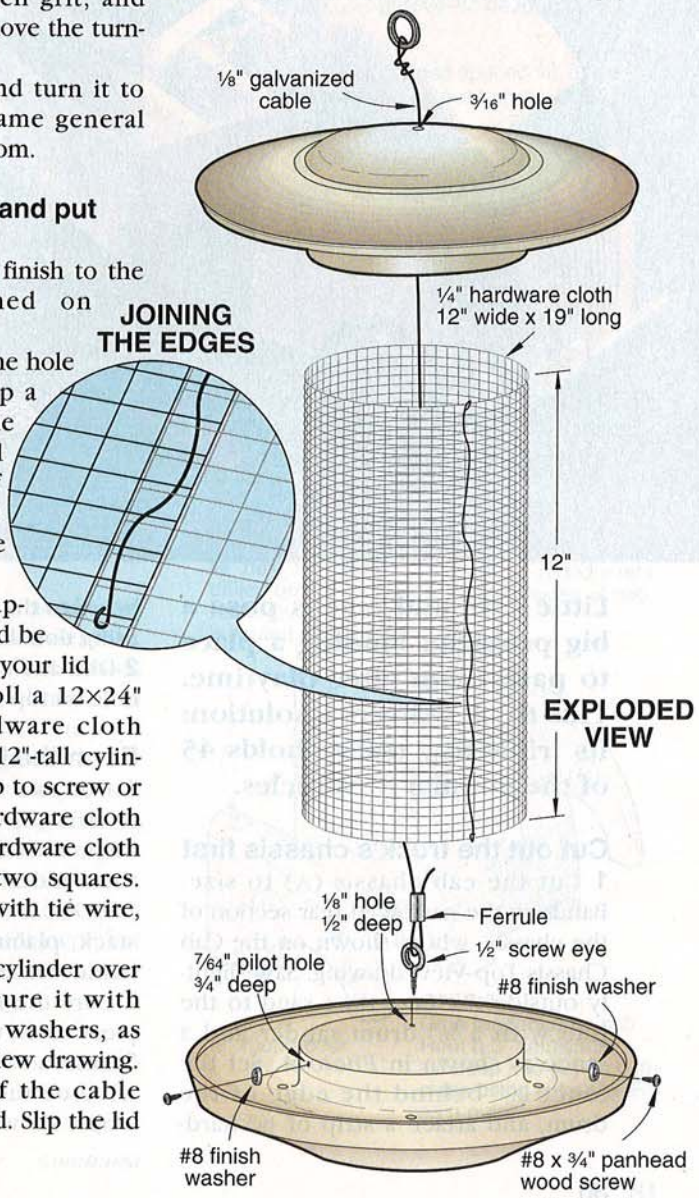
3 Cut two discs of scrapwood (⅜" plywood would be fine) to the diameter of your lid and bottom tenons. Roll a 12×24" piece of ¼"-mesh hardware cloth around them to form a 12"-tall cylinder. (It will probably help to screw or tack one edge of the hardware cloth to the discs.) Trim the hardware cloth so it overlaps by about two squares. Lace the edges together with tie wire, and remove the discs.

4 Fit the hardware-cloth cylinder over the bottom tenon. Secure it with three screws and finish washers, as shown in the Exploded View drawing.

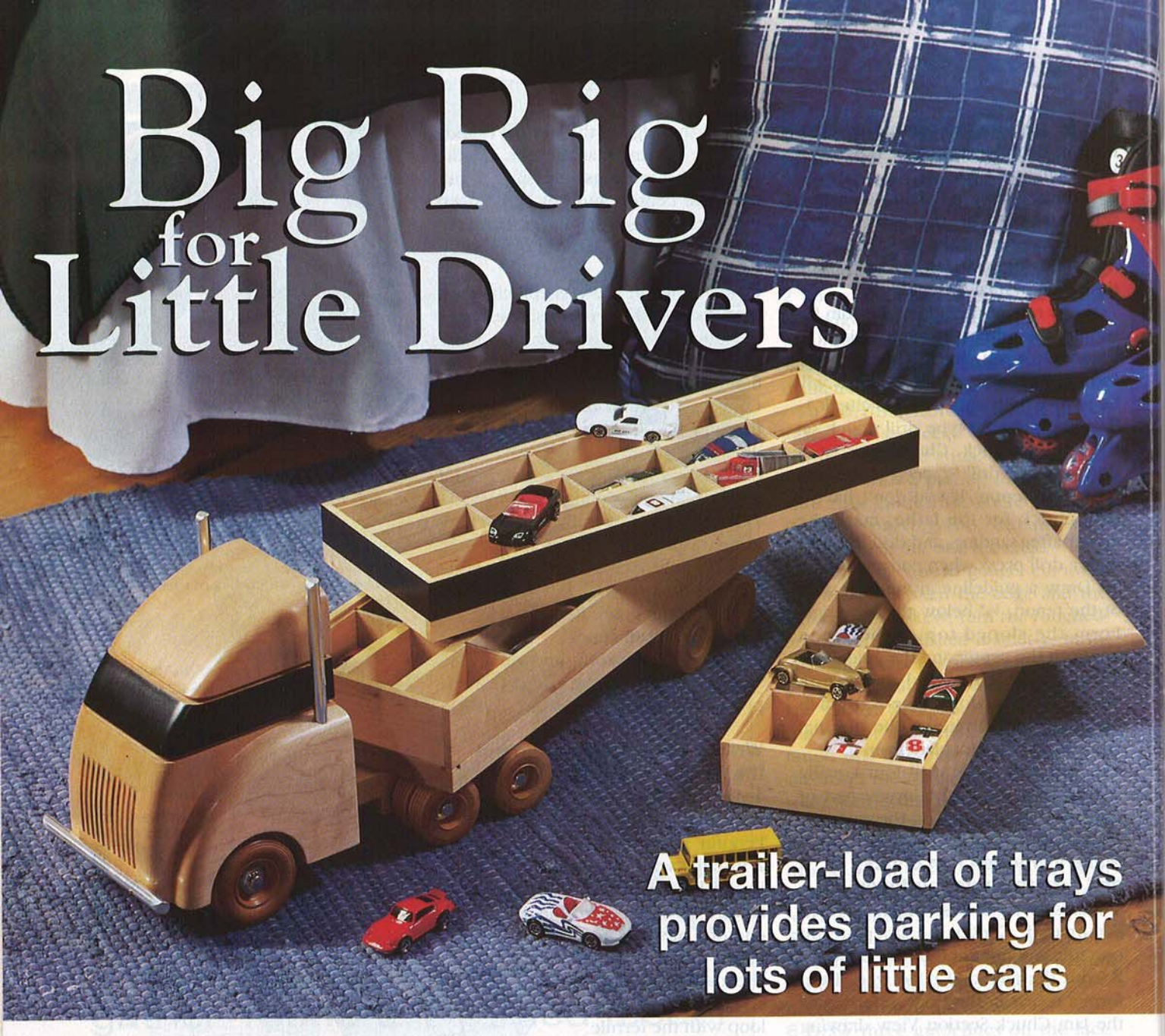
5 Pass the free end of the cable through the hole in the lid. Slip the lid into the top of the wire-mesh cylinder. When you hang the feeder, leave enough cable length above it to allow sliding the lid up for filling.

Fit the tenon on the lid into a jam chuck to turn the top surface.

Project Design: James R. Downing
Birdfeeder turned by Ray Wilber
Illustrations: Roxanne LeMoine; Lorna Johnson
Photographs: Steve Struse; Hetherington Photography



Big Rig for Little Drivers



A trailer-load of trays provides parking for lots of little cars

Little cars and trucks pose a big problem: Finding a place to park them after playtime. This truck delivers a solution: Its triple-tray trailer holds 45 of the popular 3" vehicles.

Cut out the truck's chassis first

1 Cut the cab chassis (A) to size. Bandsaw the narrowed rear section of the chassis, where shown on the Cab Chassis Top View drawing. Saw slightly outside the line; then sand to the line with a ⅝" drum sander and a fence as shown in *Photo A*. Set the fence ⅛" behind the edge of the drum, and attach a strip of ⅛" hardboard to the outfeed side of the fence, using double-faced tape.

2 Drill and chamfer the trailer kingpin hole on top of the chassis.

Form the front fenders next

1 Cut two ¾×6×5½" blanks for the fenders (B), and temporarily laminate them with double-faced tape. Adhere the Fender Full-Size Pattern (in the *WOOD PATTERNS*® insert) to the stack, placing the top of the fender outline flush with the top edge.

2 Bore the 3" hole and rip the workpiece to 4" wide where shown.

3 Drill a ⅜" exhaust-stack hole centered on the top edge of each fender where shown.

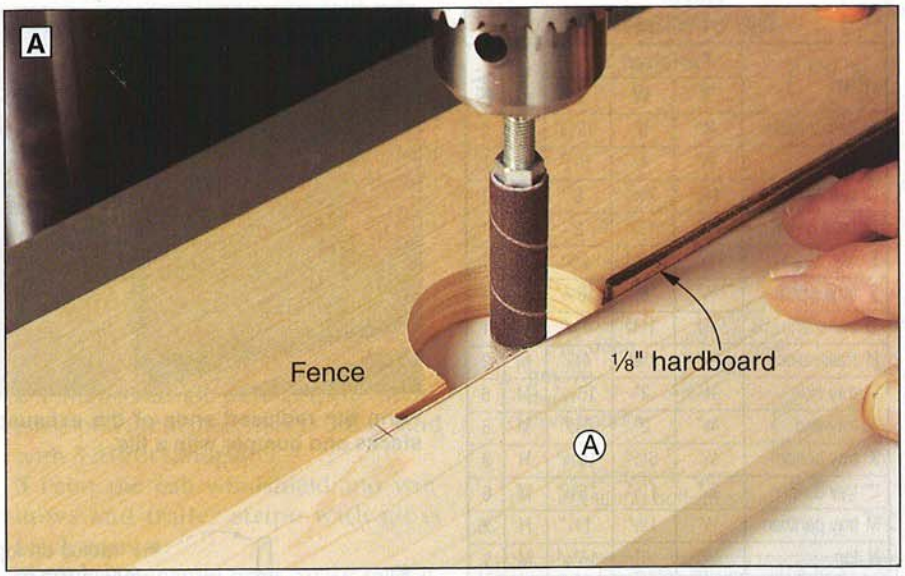
4 Bandsaw the outline, and sand to the pattern line. Rout a ½" round-over along the outer edge of each fender. Separate the fenders.

Now, construct the cab

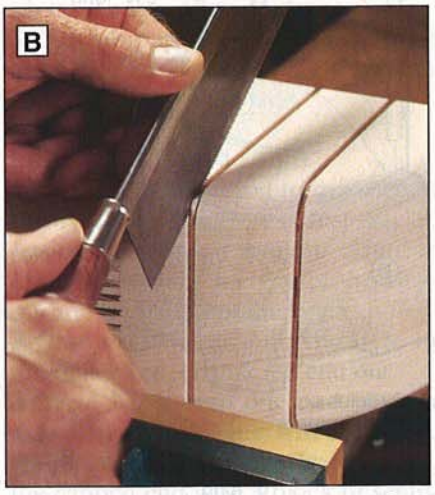
1 Laminate six ¾×7⅜×6" pieces of stock for the cab blank, as shown in *Step 1* of the Forming the Cab drawing. Attach the Full-Size Cab Pattern to one face.

2 Saw kerfs across the front, sides, and back, where shown in *Steps 2 and 3* of the drawing .

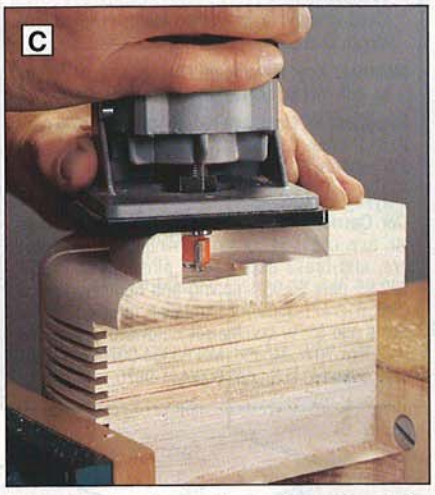
3 When cutting the groove in *Step 4* of the drawing, clamp a scrapwood backing piece to the blank to prevent tearout on the exit side of the cut.



Set up a drum sander and fence to sand the narrowed back edges of the chassis.



Saw the kerfs at the corner of the windshield with a dovetail saw. Chip out the waste with a small chisel.



Rout the fender wells in the side of the cab using the installed fender as a template for a pattern router bit.

4 When you get to *Step 7* of the drawing, rout the round-overs on the cab sides with a table-mounted router. Set a fence flush with the round-over bit's pilot to prevent the bit from falling into the window kerfs when routing.

After routing the round-overs, cut back the corners of the windshield kerfs, as shown in *Photo B*.

5 After gluing the fenders to the cab sides in *Step 8*, rout the wheel well on each side ⅛" deep into the side of the cab with a handheld router and a pattern bit, as shown in *Photo C*.

6 Glue the chassis (A) into the groove in the cab (C), bringing the parts flush at the front. Rout a ¼" round-over along the bottom front.

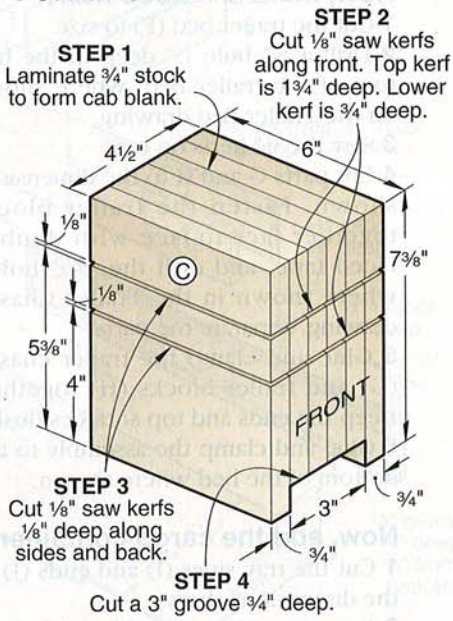
7 Cut a 13⁄32" dado 7⁄32" deep across the bottom of the cab/chassis assembly, where shown in the Cab Chassis drawing. Verify that the dimension shown will center the dado in your assembly's fender openings.

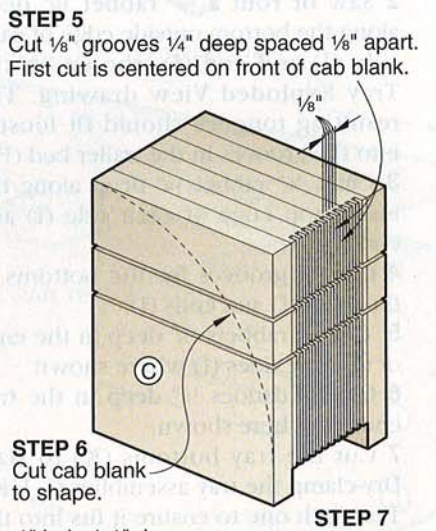
8 Cut the front chassis block (D) and rear chassis block (E) to the dimensions shown in the Bill of Materials. Referring to the Front Chassis Block drawing, form a dado to mate with the one in the chassis. Drill two 13⁄32" holes in part E, where shown in the Rear Chassis Block drawing.

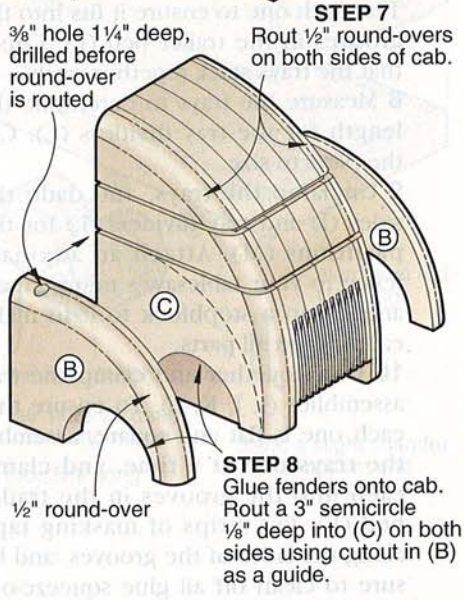
9 Glue and clamp parts D and E in place. Insert a piece of ⅜" rod to maintain alignment between the dadoes in part A and D.

Continued

FORMING THE CAB






⅜" hole 1¼" deep, drilled before round-over is routed
STEP 7
Rout ½" round-overs on both sides of cab.
Ⓑ
Ⓒ
Ⓑ
½" round-over
STEP 8
Glue fenders onto cab. Rout a 3" semicircle ⅛" deep into (C) on both sides using cutout in (B) as a guide.

Big Rig

Now, make a flatbed trailer

1 Cut the trailer bed (F) to size.

2 Drill a ⅜" hole ½" deep in the bottom of the trailer bed, where shown on the Trailer Bed drawing.

3 Saw the ⅛" kerfs on top.

4 Cut parts G and H to the dimensions shown. Fasten the trailer blocks together face-to-face with double-faced tape, and drill the 13/32" holes, where shown in the Trailer Chassis drawing. Separate the parts.

5 Glue and clamp the trailer chassis (G) and trailer blocks (H) together. Keep the ends and top surfaces flush.

6 Glue and clamp the assembly to the bottom of the bed where shown.

Now, add the cargo containers

1 Cut the tray sides (I) and ends (J) to the dimensions shown.

2 Saw or rout a ¼" rabbet ⅛" deep along the bottom outside edge of each side (I) and end (J), shown on the Tray Exploded View drawing. The resulting tongues should fit loosely into the grooves in the trailer bed (F).

3 Cut a ⅛" rabbet ⅛" deep along the inside top edge of each side (I) and end (J).

4 Cut ⅛" grooves for the bottoms in the sides (I) and ends (J).

5 Cut ⅜" rabbets ⅛" deep in the ends of the tray sides (I) where shown.

6 Cut ⅜" dadoes ⅛" deep in the tray ends (J) where shown.

7 Cut the tray bottoms (K) to size. Dry-clamp the tray assemblies (I, J, K). Test each one to ensure it fits into the grooves in the trailer bed (F). Check that the trays stack together easily.

8 Measure the trays to determine the length for the tray dividers (L). Cut the parts to size.

9 Unclamp the trays, and dado the sides (I) and tray dividers (L) for the partitions (M). Attach an auxiliary fence to your tablesaw's miter gauge, and clamp a stopblock to it to make each cut on all parts.

10 Glue together and clamp the tray assemblies (I, J, K, L). To ensure that each one is flat and square, assemble the trays one at a time, and clamp each into the grooves in the trailer bed (F). Put strips of masking tape along the sides of the grooves, and be sure to clean off all glue squeeze-out

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A cab chassis	¾"	3"	12⅝"	M	1
B* fender	¾"	4"	5½"	M	2
C cab	4½"	7⅜"	6"	LM	1
D front block	⅝"	4¼"	2"	M	1
E rear block	⅝"	2¾"	4¾"	M	1
F trailer bed	¾"	6"	16⅞"	M	1
G trailer chassis	¾"	1¼"	4¾"	M	1
H trailer block	¾"	1⅝"	4¾"	M	2
I tray side	⅜"	2"	16⅞"	M	6
J tray end	⅜"	2"	5½"	M	6
K tray bottom	⅛"	5½"	16⅜"	H	3
L** tray divider	⅜"	1½"	16⅜"	M	6
M tray partition	⅛"	1½"	13¾"	H	36
N top	¾"	6"	16⅞"	M	1

* Start with oversized blanks to make fenders; see instructions.

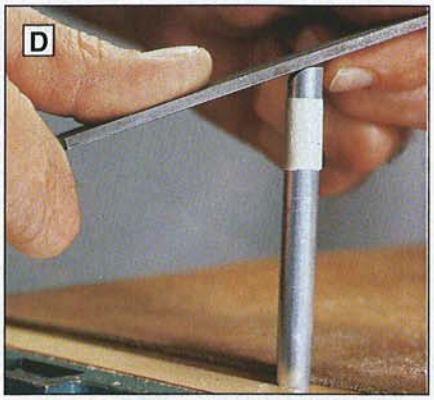
** Cut part longer initially; then trim to finished length in accordance with instructions.

Materials Key: H–tempered hardboard; M–soft maple; LM–laminated soft maple.

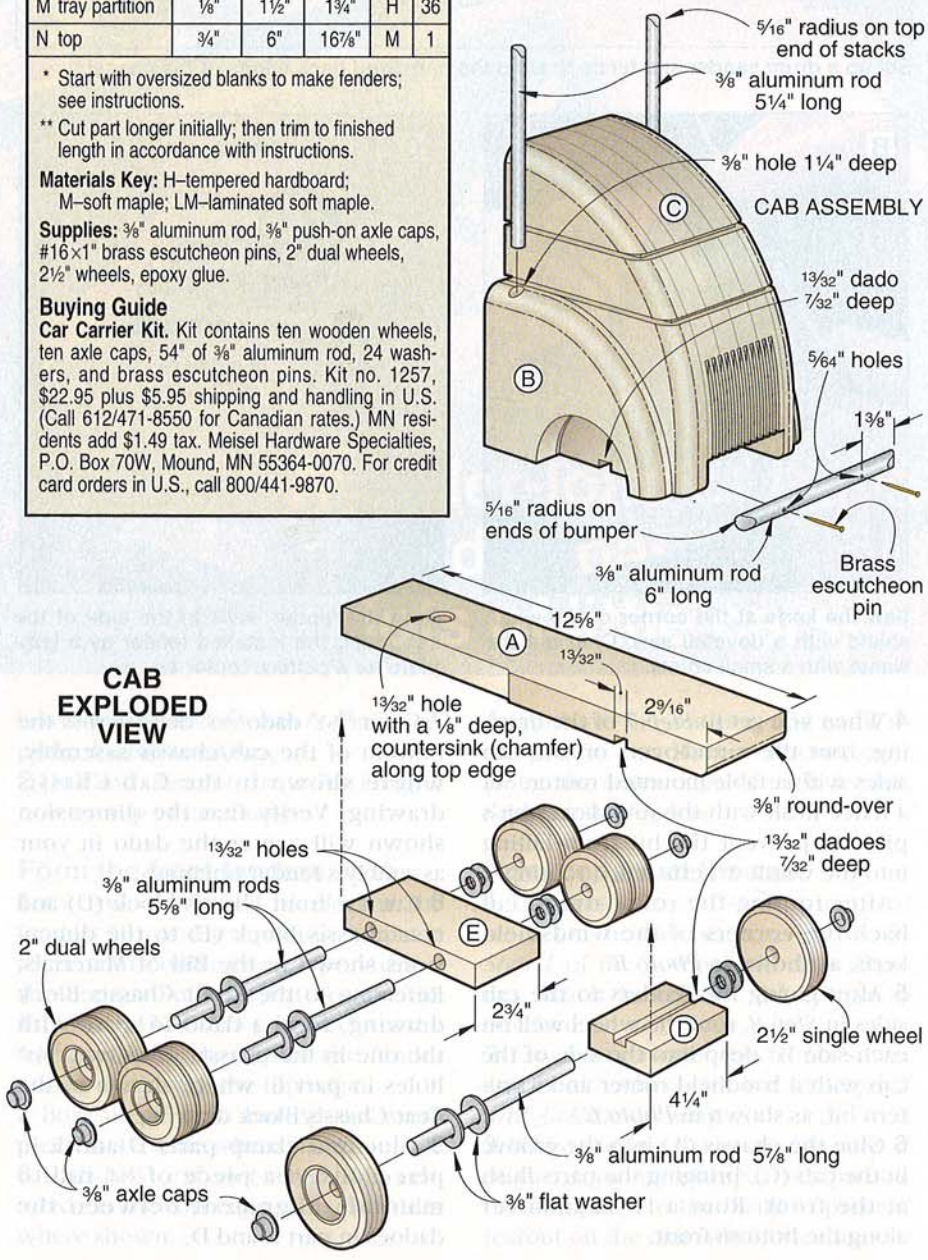
Supplies: ⅜" aluminum rod, ⅜" push-on axle caps, #16×1" brass escutcheon pins, 2" dual wheels, 2½" wheels, epoxy glue.

Buying Guide

Car Carrier Kit. Kit contains ten wooden wheels, ten axle caps, 54" of ⅜" aluminum rod, 24 washers, and brass escutcheon pins. Kit no. 1257, $22.95 plus $5.95 shipping and handling in U.S. (Call 612/471-8550 for Canadian rates.) MN residents add $1.49 tax. Meisel Hardware Specialties, P.O. Box 70W, Mound, MN 55364-0070. For credit card orders in U.S., call 800/441-9870.



Form the radiused ends of the exhaust stacks and bumper with a file.



along the bottom of the tray before clamping it to the bed.

11 Cut the top (N) to the dimensions shown. Rout or saw a ¼" rabbet ⅛" deep along the bottom edge. Rout round-overs along the top and front edges where shown.

Give the truck a tough finish

1 Drill to enlarge the holes to $^{13}/_{32}$" through two 2½" toy wheels and eight 2" dual toy wheels.

2 Finish-sand all parts. Apply semi-gloss polyurethane. After it dries, sand with 320-grit sandpaper.

3 Paint the cab windshield and windows and trailer stripe with gloss black enamel.

4 After the enamel dries, mask over it. Then, apply a second coat of clear finish to all parts. Allow to dry.

5 Cut the partitions (M) to size. Fit them into the dadoes in the trays, but do not glue them in place.

Let's get this rig rollin'

1 Cut ⅜" aluminum rod to the lengths shown for the axles, exhaust stacks, front bumper, and kingpin. Sand or file a chamfer on one end of the kingpin and both ends of the axles.

2 Glue the kingpin into the hole in the trailer bed, chamfered end out.

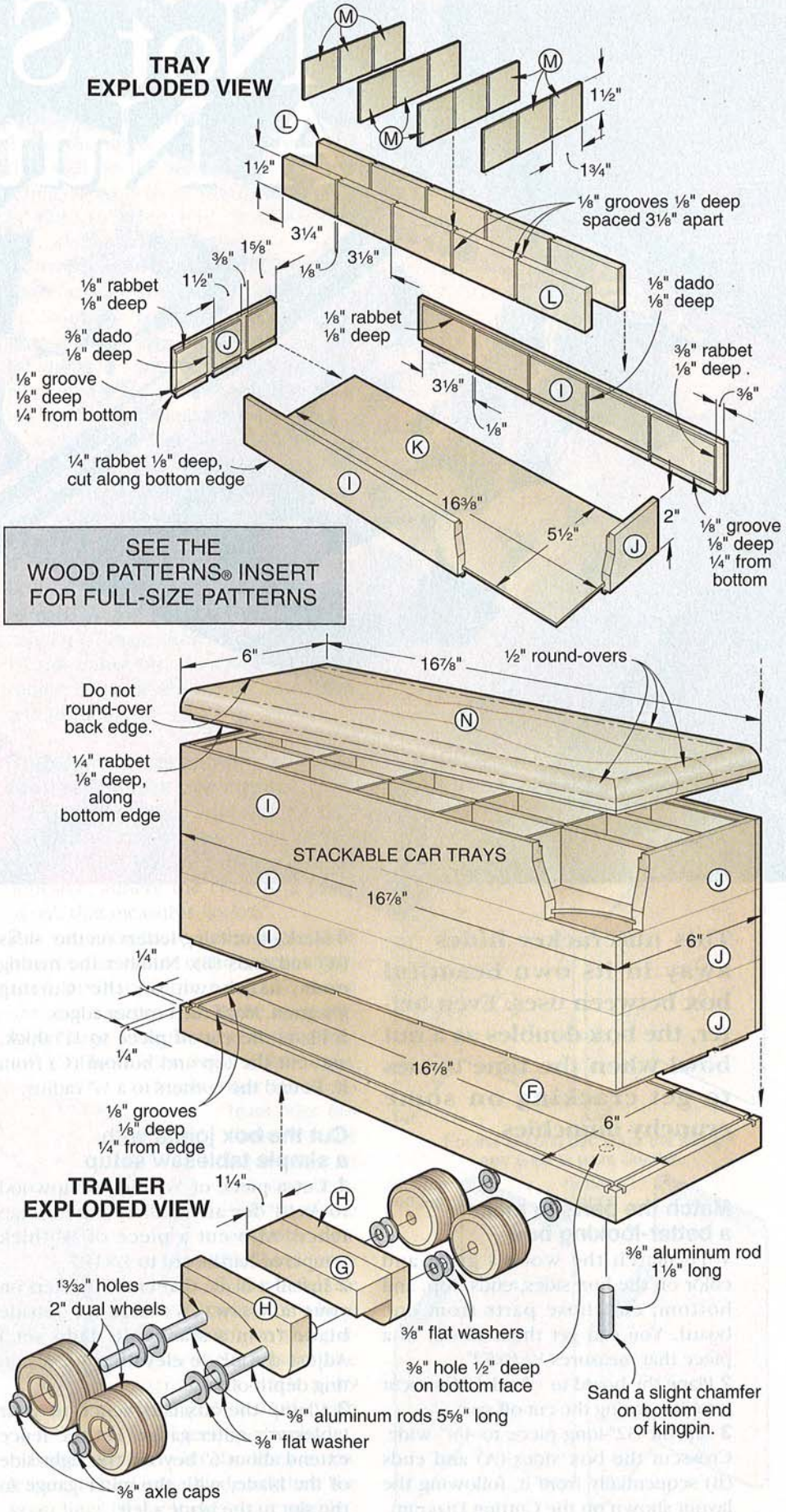
3 Drive a cap onto one end of each axle. Then, install the wheels, axles, and spacer washers as shown. Back the capped end with a block of scrapwood, and drive the other cap on.

4 File the radiused ends on the bumper and exhaust stacks. We marked the end of the radius with masking tape, as shown in *Photo D*.

5 Drill holes for the escutcheon pins in the front bumper. Drill them with a drill press and V-block for accuracy.

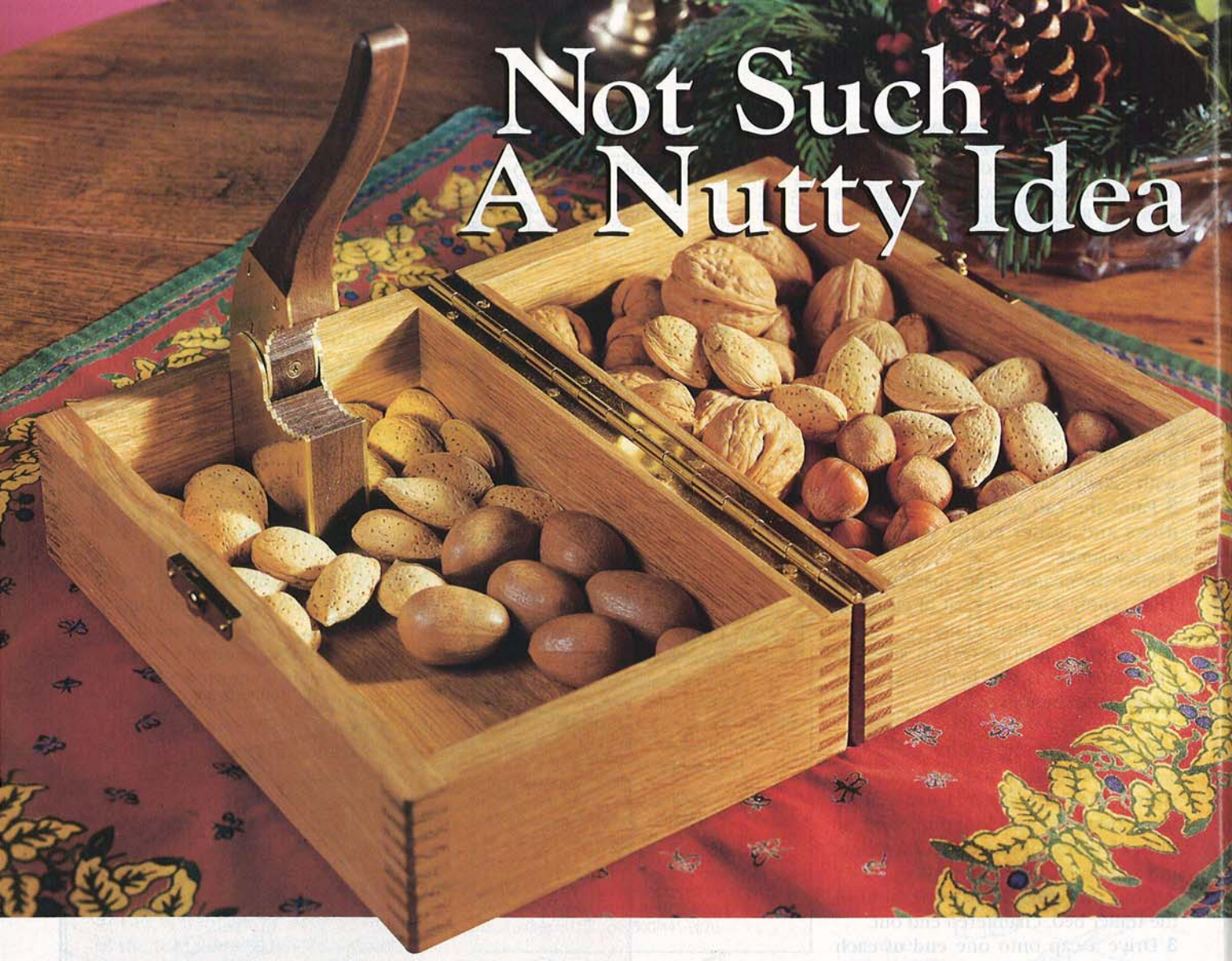
6 Polish the bumper and exhaust stacks with a fine Scotch-Brite pad. For a chrome-like shine, buff them with white rouge on a buffing wheel.

7 Drill pilot holes for the escutcheon pins, and attach the bumper to the front of the cab. Put a drop of instant glue or epoxy on the pins when you drive them in. Glue the stacks into the holes in the fenders.



Project Design: Jan Svec
Illustrations: Kim Downing; Lorna Johnson
Photographs: Hetherington Photography

Not Such A Nutty Idea



This nutcracker hides away in its own beautiful box between uses. Even better, the box doubles as a nut bowl when the time comes to get cracking on some crunchy munchies.

Match the parts to make a better-looking box

1 To match the wood's grain and color on the box sides, ends, top, and bottom, cut those parts from one board. You can get them all out of a piece that measures ¾×6×52".

2 Plane the board to ½" thick. Crosscut it to 32", saving the cut-off part.

3 Rip the 32"-long piece to 4¾" wide. Crosscut the box sides (A) and ends (B) sequentially from it, following the layout shown on the Cutting Diagram.

4 Mark identifying letters on the sides (A) and ends (B). Number the mating ends, as shown on the Cutting Diagram. Mark the bottom edges.

5 Plane the cut-off piece to ¼" thick, and cut the top and bottom (C) from it. Round the corners to a ¼" radius.

Cut the box joints with a simple tablesaw setup

1 Cut a piece of ¾"-thick scrapwood to 3×18" for an auxiliary miter-gauge fence. Also cut a piece of ⅛"-thick tempered hardboard to ½×1¼".

2 Install a blade that cuts a ⅛" kerf on your tablesaw. (We used an outside blade from a stackable dado set.) Adjust the blade elevation for a cutting depth of ½".

3 Clamp the auxiliary fence to your tablesaw's miter gauge. Let the fence extend about 6" beyond the right side of the blade, with the miter gauge in the slot to the blade's left.

4 Cut a blade kerf through the auxiliary fence. Glue the ⅛×½×1¼" piece of hardboard into the kerf, with the end extending from the front face of the auxiliary fence, as shown in the Box Joint Cutting Jig drawing. This will be the indexing pin for the jig.

5 After the glue dries, slide the fence to the right, locating the left side of the indexing pin ⅛" from the right side of the blade. Attach the fence to the miter gauge.

6 Raise the blade to a cutting depth of 17/32", and saw a kerf through the auxiliary fence. The deeper cut makes the joint fingers longer than the thickness of the part. This allows you to sand them to final length after assembly, resulting in a better-looking joint.

7 Saw test joints in scrapwood pieces that are the same width and thickness as the box sides and ends.

To cut a test joint with the jig, stack two pieces of stock face to face, and

stand them on end in front of the miter-gauge jig. Align the right edges, and push the lower right corner of the stack against the indexing pin on the jig. Cut through both pieces, but do not pull the jig and stock back past the blade. Instead, lift the workpieces away before returning the jig to make the next cut.

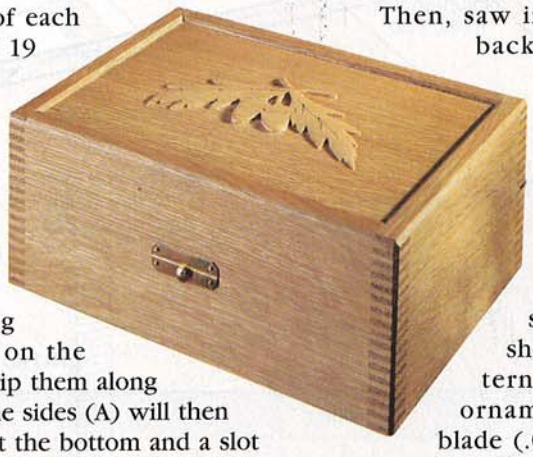
For the next cut, position the kerfs in the workpieces over the jig's indexing pin. Make the cut, again removing the workpieces before pulling the jig back. Continue until you've cut kerfs all along the end of the pieces.

8 Check the fit of the joints by sliding the two parts together, placing the surfaces that were together toward the outside of the joint. (This helps hide any chip-out that might occur on the workpiece face that rides against the jig. Normally, the auxiliary fence minimizes chip-out.)

Tap the auxiliary fence to move the pin slightly toward the blade if the fingers are too wide, or away from the blade if they're too thin. Cut additional test joints until you're satisfied with the results.

9 Cut the joints in parts A and B. When cutting them, stack the parts in mating pairs, as shown in the Cutting Joints in Sides and Ends illustration. Remember to keep the bottom edges of both pieces together and toward the right as you work.

10 After machining the joint fingers, rip parts A and B to about 4⅝". To determine the actual width of each side (A), count 19 fingers and spaces from the bottom up, and rip the waste off the top edge. Then count 19 fingers and spaces starting from the top on the ends (B), and rip them along the bottom. The sides (A) will then have a finger at the bottom and a slot at the top; the sides (B), a slot at the bottom and a finger at the top, as shown in the Box Joints illustration on the *next page*.



Chamfer the inside edges, and slot the sides and ends

1 On the inside face of the end (B) that will be the left end of the box when viewed from the front, drill a ¼" hole 5/16" deep 1 5/16" from the bottom, centered lengthwise.

2 Dry-assemble (no glue) the sides (A) and ends (B), and clamp them together. Sand the top and bottom edges flush, if necessary. (You can do this by gluing a sheet of 120-grit sandpaper face up to a flat board, then sliding the box back and forth on it.)

3 With a chamfer bit chucked in a table-mounted router, form a ⅛" chamfer around the inside and outside edges on the top and bottom. Unclamp and disassemble the box.

4 Now, form ¼" grooves ¼" deep ⅛" from each edge on the inside face of parts A and B, shown in the Sides and Ends illustration. Do this with a ¼" slot cutter bit and a table-mounted router. Stop the groove 3/16" from each end of each part.

Scrollsaw an ornament to lend the box eye appeal

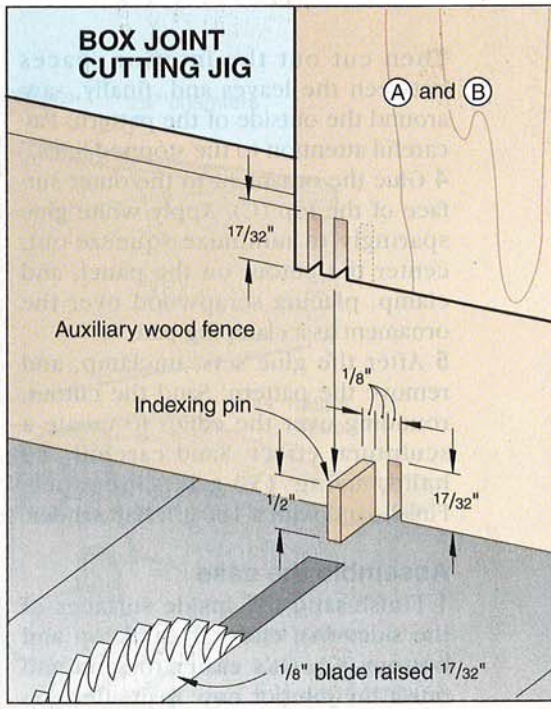
1 Photocopy the Full-Size Oak Leaf pattern in the *WOOD PATTERNS®* insert. Using rubber cement or spray adhesive, adhere the copy to a piece of oak that measures ⅛×3×6".

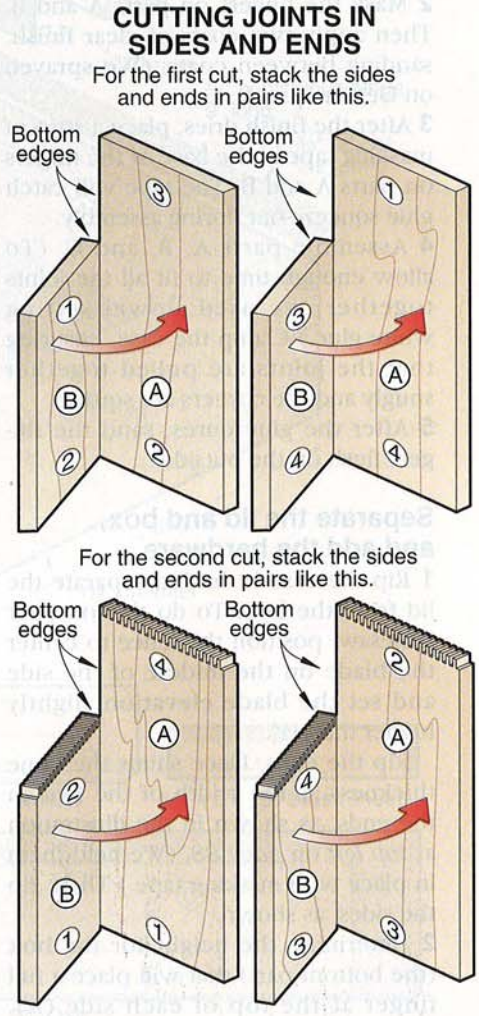
2 If your scrollsaw has a large blade hole in the table, make a zero-clearance auxiliary table for it. To make one, cut a piece of ⅛" Baltic birch plywood large enough to cover the table. Then, saw into it from the back edge until its front edge lies flush with the front edge of the saw table. Affix it to the saw with double-faced tape.

3 Drill blade start holes where shown on the pattern. Scrollsaw the ornament with a #9 blade (.053×.018", with 11½–14 teeth per inch).

Begin cutting with the lines in the leaves. (The larger blade renders the sawn lines in the leaves more visible.)

Continued




CUTTING JOINTS IN SIDES AND ENDS
For the first cut, stack the sides and ends in pairs like this.
Bottom edges
Bottom edges
For the second cut, stack the sides and ends in pairs like this.
Bottom edges
Bottom edges

Then cut out the interior spaces between the leaves and, finally, saw around the outside of the pattern. Pay careful attention to the stopped lines.

4 Glue the ornament to the outer surface of the top (C). Apply white glue sparingly to minimize squeeze-out, center the cutout on the panel, and clamp, placing scrapwood over the ornament as a clamping pad.

5 After the glue sets, unclamp, and remove the pattern. Sand the cutout, rounding over the edges to create a sculptural effect. Sand carefully by hand, using 150-grit sandpaper. Finish-sand with a 180-grit flap sander.

Assemble the case

1 Finish-sand the inside surfaces of the sides (A), ends (B), and top and bottom (C). (It's easier to sand and finish the interior now than after you assemble the box.)

2 Mask the fingers on parts A and B. Then apply two coats of clear finish, sanding between coats. (We sprayed on Deft lacquer.)

3 After the finish dries, place a strip of masking tape at the base of the fingers on parts A and B. The tape will catch glue squeeze-out during assembly.

4 Assemble parts A, B, and C. (To allow enough time to fit all the joints together, we used slower-setting white glue.) Clamp the case, ensuring that the joints are pulled together snugly and the corners are square.

5 After the glue cures, sand the fingers flush on the outside.

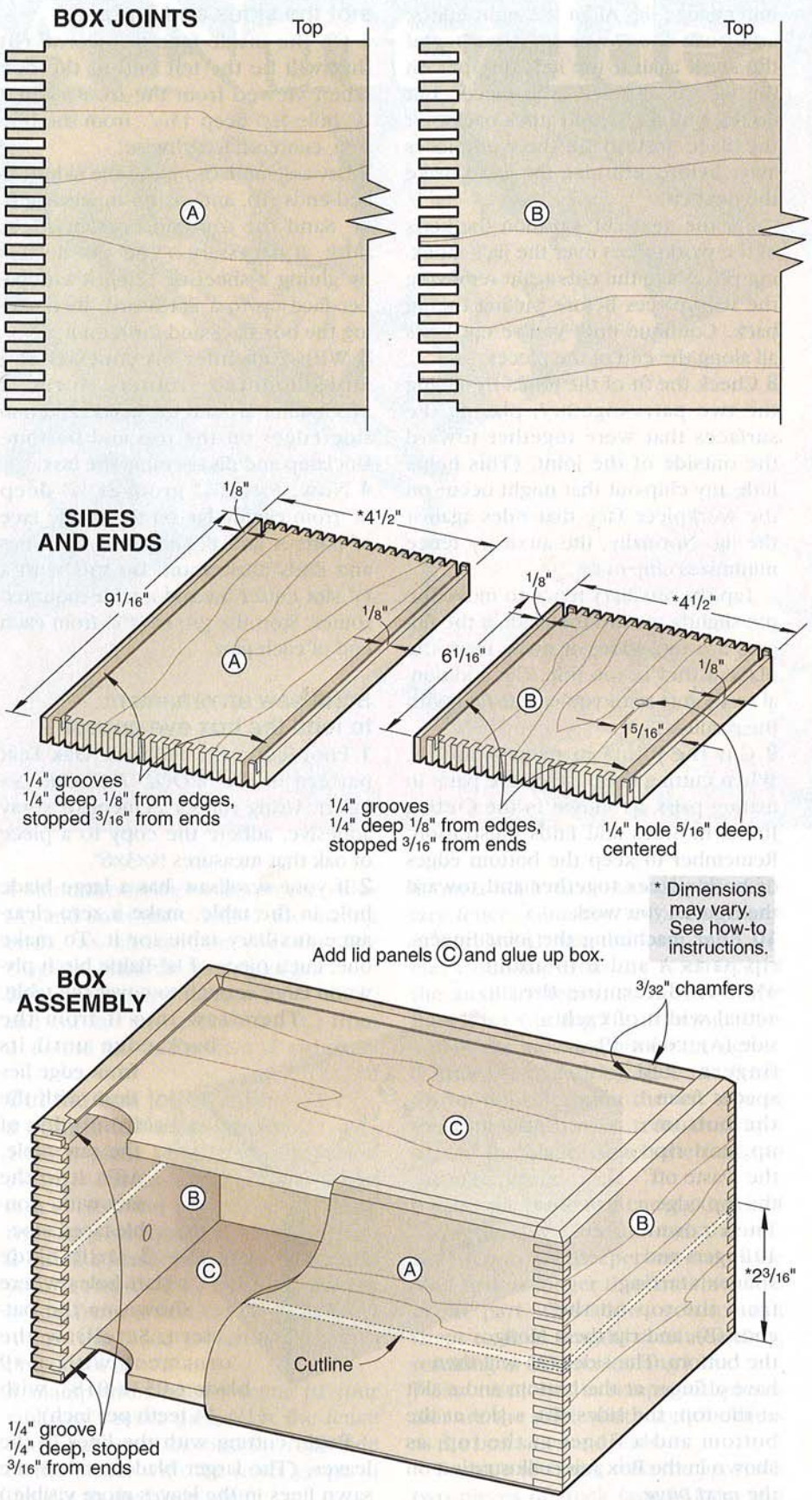
Separate the lid and box, and add the hardware

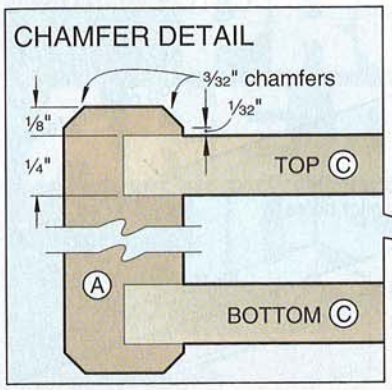
1 Rip the case in half to separate the lid from the box. To do this on your tablesaw, position the fence to center the blade on the middle of the side and set the blade elevation slightly higher than ½".

Rip the ends. Place shims the same thickness as the width of the kerf in the ends, as shown in the illustration at *top left* on *page 88*. (We held them in place with masking tape.) Then, rip the sides, as shown.

2 Determine the height for the box (the bottom part) that will place a full finger at the top of each side (A).

Continued





SEE THE *WOOD PATTERNS*® INSERT FOR FULL-SIZE PATTERNS

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A* box side	½"	4¾"	9 1/16"	O	2
B* box end	½"	4¾"	6 1/16"	O	2
C top, bottom	¼"	5 7/16"	8 7/16"	O	2
D** lever	¾"	1½"	7"	W	1
E** block	¾"	2"	1⅞"	W	1

*Initial dimensions shown.

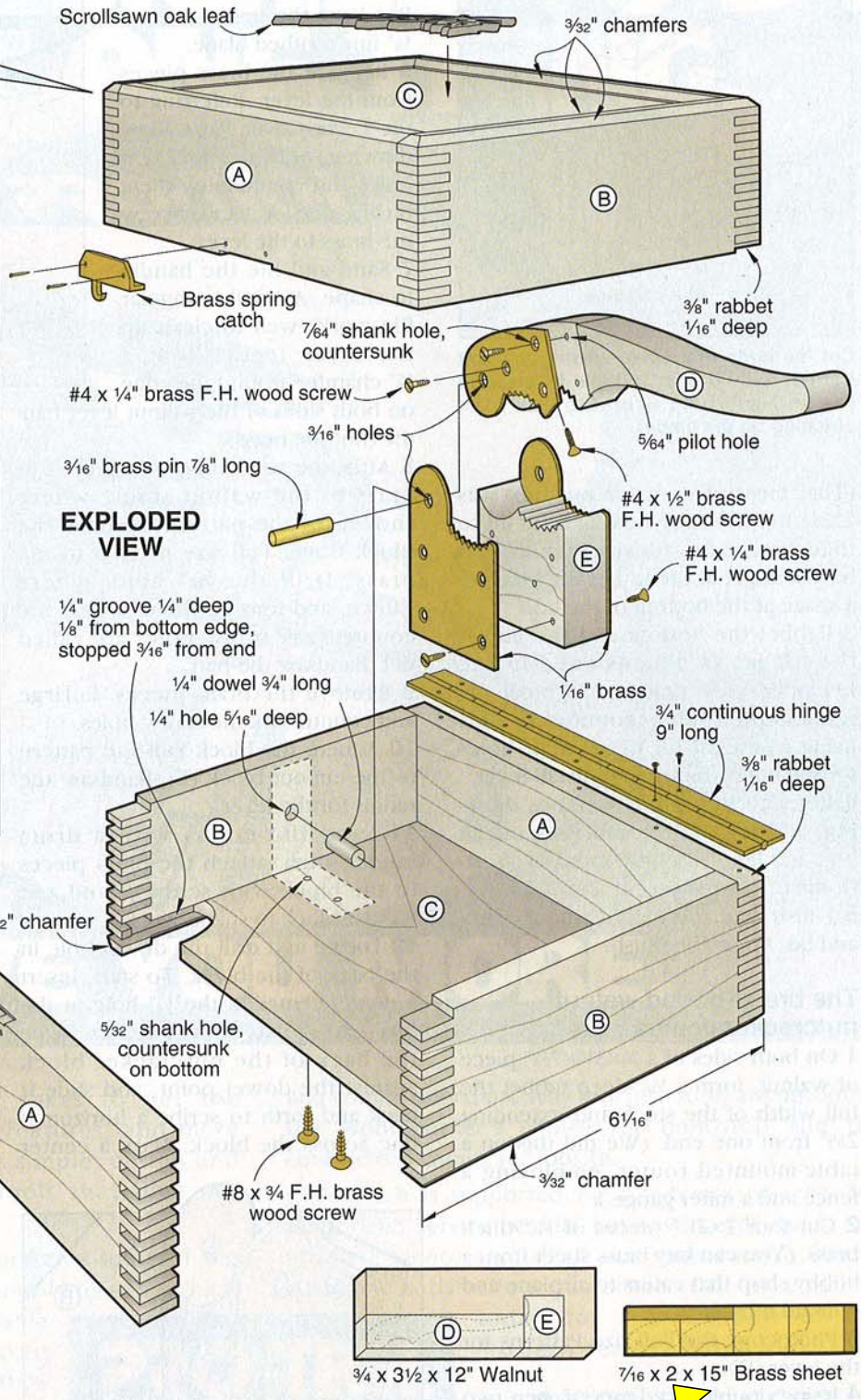
**See full-size pattern for blank size.

Materials Key: O–oak; W–walnut.

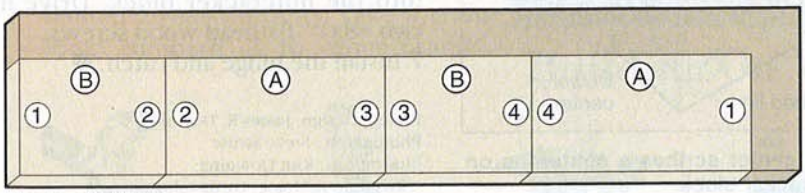
Supplies: Brass sheet, 1/16×2×11"; brass flathead wood screws, #4×¼" and #8×¾"; brass rod, 3/16" diameter × 1" long; brass continuous hinge, ¾×12"; brass spring catch.

Buying Guide

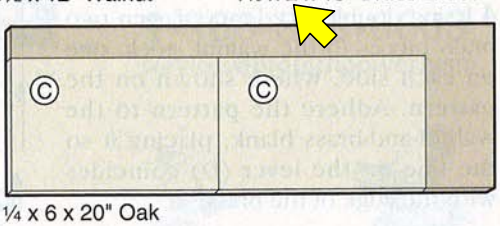
Hinge, catch. Brass continuous jewelry-box hinge, ¾×12", item no. 72SK12; brass spring catch, 1½" wide, no. 64C7. Call for current prices and shipping charges. Constantine's, 2050 Eastchester Rd., Bronx, NY 10461. Call 800/223-8087.



CUTTING DIAGRAM

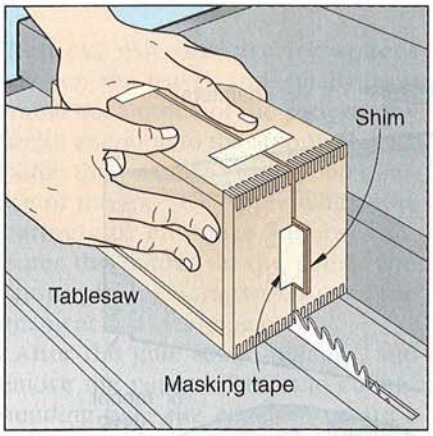


½ x 6 x 32" Oak



¼ x 6 x 20" Oak

Nutcracker



Cut the ends first when sawing the box bottom and lid apart. Shims inserted in the kerf will help keep the box from pinching on the blade.

(That measurement for our box was 2⅛".) Rip both the box and the lid to that dimension. Ideally, you'll then have a finger at the top of the box and a space at the bottom of the lid.

3 Rabbet the bottom and the lid for the hinge, as dimensioned in the Exploded View drawing. (We cut the rabbets on a table-mounted router, using a straight bit.) Drill pilot holes for the hinge, but do not install it yet.

4 Refer to the Catch Mortises drawing, and lay out the mortises in the box and lid. Chisel the mortises. Test-fit the catch, but do not install it.

5 Finish-sand the exterior of the box and lid. Apply the finish.

The brass-bound walnut nutcracker comes next

1 On both sides of a ¾×3½×7¼" piece of walnut, form a 1/16"-deep rabbet the full width of the stock and extending 2½" from one end. (We did this on a table-mounted router, employing a fence and a miter gauge.)

2 Cut four 2×2½" pieces of 1/16"-thick brass. (You can buy brass sheet from a hobby shop that caters to airplane and railroad modelers.)

3 Photocopy the Full-Size Patterns for the lever (D).

4 Using double-faced tape, fasten two brass pieces to the walnut stock, one on each side, where shown on the pattern. Adhere the pattern to the walnut-and-brass blank, placing it so the line on the lever (D) coincides with the edge of the brass.

5 Drill holes through the lever where shown. Bandsaw the lever, using a ¼" fine-toothed blade.

6 Remove the brass pieces from the lever. Referring to the Lever Cover Parts View drawing, enlarge the screw holes and countersink them on the outside faces. Screw the brass to the lever.

7 Sand and file the handle to shape. A small triangular file works well to clean up the lever teeth. Rout a ⅛" chamfer around the edge on both sides of the walnut lever handle (not the brass).

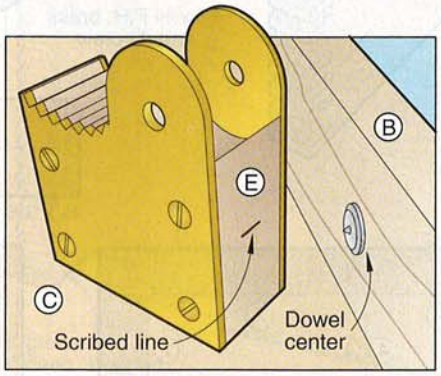
8 Affix the remaining two pieces of brass to the walnut stock, where shown on the pattern. Adhere the Block Cover Full-Size pattern to the brass. Drill the 3/16" hole, where shown, and four 3/32" holes where the countersunk screw holes are called out. Bandsaw the part.

9 Remove the brass pieces. Enlarge and countersink the screw holes.

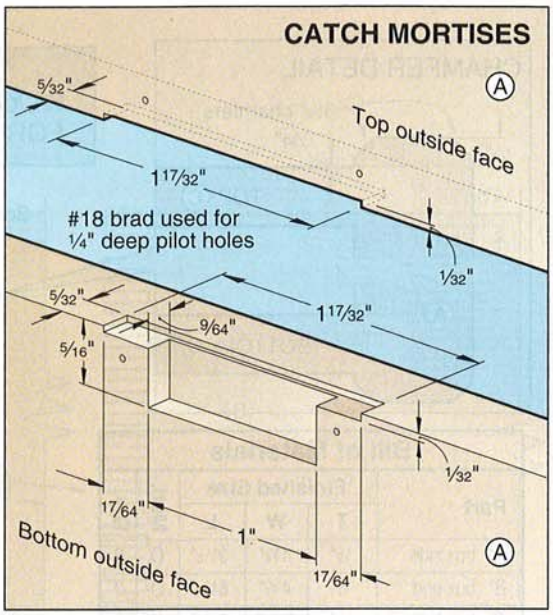
10 Adhere the Block Full-Size pattern to the cut-out block (E). Bandsaw the radius for the lever.

11 Sand the radius with a drum sander; then, attach the brass pieces to the block with screws. Sand and file the block to shape.

12 Locate and drill the dowel hole in the back of the block. To start, insert a dowel center in the ¼" hole in the box end (B), as shown *below*. Place the back of the nutcracker block against the dowel point, and slide it back and forth to scribe a horizontal line across the block. Mark a center on the line at the middle of the block. There, drill a ¼" hole ½" deep.



A dowel center scribes a centerline on the nutcracker block.



Assemble the nutcracker, and mount it in the box

1 Sand the lever's brass faces smooth and flush. Sand with progressively finer grits from 150 to 600 to bring up a shine. Finish-sand the walnut. Spray on two coats of clear lacquer, taking care to avoid runs on the brass.

2 After the finish dries, position the lever in the block opening. Slide a 1 5/16" length of 3/16" brass rod through the block and lever holes. Check the lever movement. Open the lever all the way, and drill and countersink a 3/32" hole, where shown on the pattern. Drive in a #4×½" flathead brass wood screw to lock the pin in place.

3 File the ends of the rod flush with the brass block sides. Polish the sides to match the lever. Spray a clear finish on the block.

4 Now, mount the nutcracker. First, lay out centers and drill two 5/32" holes through the box bottom (C) for the nutcracker mounting screws. Countersink the holes on the outside of the box.

5 Glue a ¾" length of ¼" dowel rod into the ¼" hole in the box. Glue and clamp the nutcracker block to it.

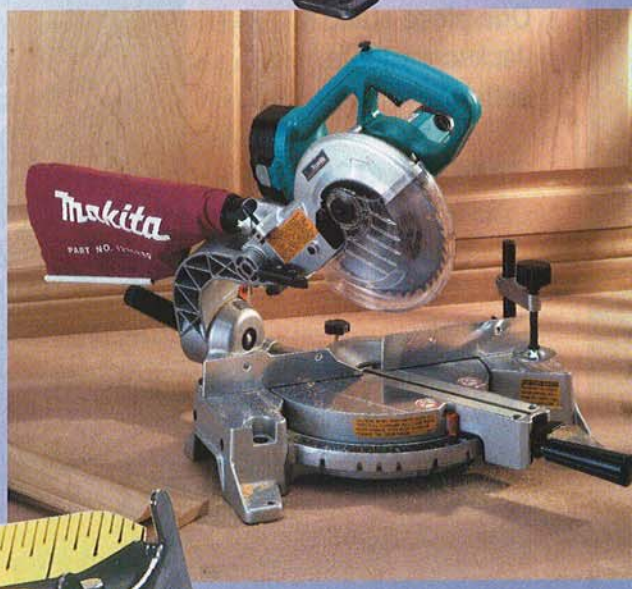
6 Guiding through the holes in the box bottom, drill pilot holes ¾" deep into the nutcracker block. Drive in two #8×¾" flathead wood screws.

7 Install the hinge and catch.

Project Design: James R. Downing
Photograph : Steve Struse
Illustrations: Kim Downing; Roxanne LeMoine; Lorna Johnson

Tooling Up for 2000

Our editors select the latest and greatest in woodworking tools and accessories for the next millennium



you saw it here first

Yours truly, all decked out as the human circular saw last Halloween.

They say that if you hang around tools long enough, that if you eat, drink, and breathe tools every day, you run the risk of turning into one. (The walking, talking circular saw you see in the photo at *left* is me at a costume party.) But I know I'm not the only tool junkie on the block. Many of you, our readers, suffer from the same powerful addiction, and if it leads to better woodworking, then hey, it's a good thing. And that's why I think you'll enjoy our first-ever New Product Preview, custom-made for folks like us. The timing couldn't be better.

Here, at the turn of the millennium, we're seeing great improvements, innovations, and trends aimed at bringing woodworkers more time savings, safety, convenience, and accuracy. For example, we're witnesses to a battery-powered revolution that is cutting the power cord on tools previously thought to be too power hungry to run on anything less than 120 volts of alternating current. In recent years manufacturers have found ways to produce tools, such as oscillating spindle sanders, detail sanders, and random-orbit sanders, that were previously reserved pretty much for professional users, at prices that we average guys can afford.

To corral this year's explosion of new and better, we gathered up the very latest products and packaged them in this EXTRA supplement just for you. To manage this awesome task, we contacted over 150 manufacturers and received information on hundreds of cutting-edge products. And from this group, we made our selections.

We'd like to thank all of the manufacturers who rushed to photograph their new products, in some cases, just for us. Many of these you'll see for the very first time because of the efforts of these tool makers. We also want to tip our hats to freelance writer Bob Ehlert and graphic designer Mary Bendgen who helped put together this special section.

Note that in the case of our New Product Preview, we made a departure from our usual practice of testing every tool we show you. Since all of that testing takes a lot of time, we opted in this case to bring you the news first. You can bet we'll be examining a lot of these products in upcoming issues.

So, here it is, Tooling Up for 2000, *WOOD* Magazine's New Product Preview. We hope you'll use it, enjoy it, and by all means please let us know how you liked it.

Until we meet again,

Bill Krier

—Bill Krier, Assistant Manager Editor/Products

You'll bond with some of these new products and others will clamp on to a spot in your wood shop.

new PRODUCTS give you an edge

Tool Manufacturers and Woodworkers Want the Best

The drive to build a better "mousetrap" is producing dividends for both the manufacturer and the woodworker. Tool makers' new designs and innovations bring equipment and accessories to the market that improve our accuracy, safety, and enjoyment level.

▲ New Craftsman Radial Arm Saw Prevents Lunging Blades

If you've ever experienced a blade lunging at you while crosscutting with a radial-arm saw, you'll appreciate the newest feature on the Craftsman Radial Arm Saw. This 10" machine has a "control cut" mechanism—actually powered by a separate motor and steel cable to the cutting head—that allows you to set the speed of the cut. The 1½-hp saw has a maximum rip capacity of 26" and crosscut capacity of 15½". There's a 40×27" worksurface at a work height of 36".

The Craftsman Professional 10" Radial Arm Saw Model 22038 is available now at Sears and sells for $650. Call 800/377-7414 for more information, or visit the web site at www.sears.com/craftsman.

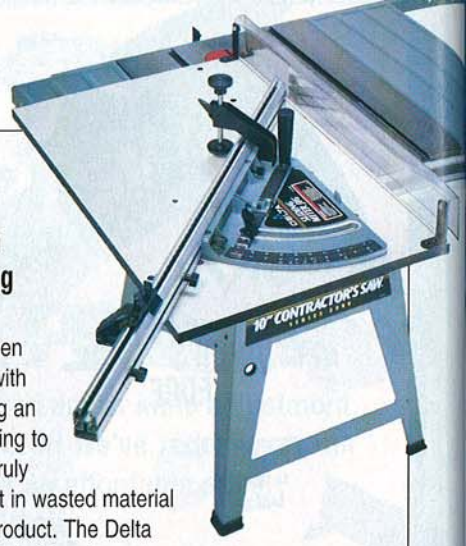
New Blade-Changing Tool Protects Saw Blades and Hands ▶

Precision woodworkers change their tablesaw blades frequently. That's because there are so many new job-specific blades for specialized materials and applications. But everyone knows how hard blade changes can be on the blade and the operator's hands. CMT USA has come up with a solution—the Blade-Loc. With this plastic shield-like device, you simply raise the blade for easy access to the arbor nut, place the Blade-Loc over the blade, and apply light pressure with your hand. You're ready to remove the nut. There's no risk of the wrench contacting the blade's teeth. Blade-Loc will be available in September for $15. Call CMT USA at 888/268-2487, or visit the web site at www.cmtusa.com.

◀ Stanley Tape Measure Is a 'Standout'

In sports you sometimes compete against yourself. The same seems to be true with Stanley and tape measures. The newest model of the Fat Max line now has a standout—the distance you can pull it out before it buckles—of 11', tops in the industry. The 25' tape rule also has grown in width from 1" to 1¼", making it easier to read.

The new Fat Max is available now at home centers and sells for $18. Call Stanley at 800/STANLEY, or visit the web site at www.stanleyworks.com.



The Jig Is Up With Delta's New Sliding Miter Jig ▶

The pressure's on when mitering workpieces with your tablesaw. Making an inaccurate cut—or trying to handle and cut an unruly workpiece—can result in wasted material and a poor finished product. The Delta Sliding Miter Jig can help if you've got a tablesaw with ¾×⅜" miter-gauge slots. A work support on the adjustable fence accommodates stock up to 60" long. The large table can handle pieces up to 16⅜" wide at a 45° miter and up to 20¾" at a 90° miter. Other features include work clamps to secure things and a flip stop on the fence that allows you to make repetitive cuts.

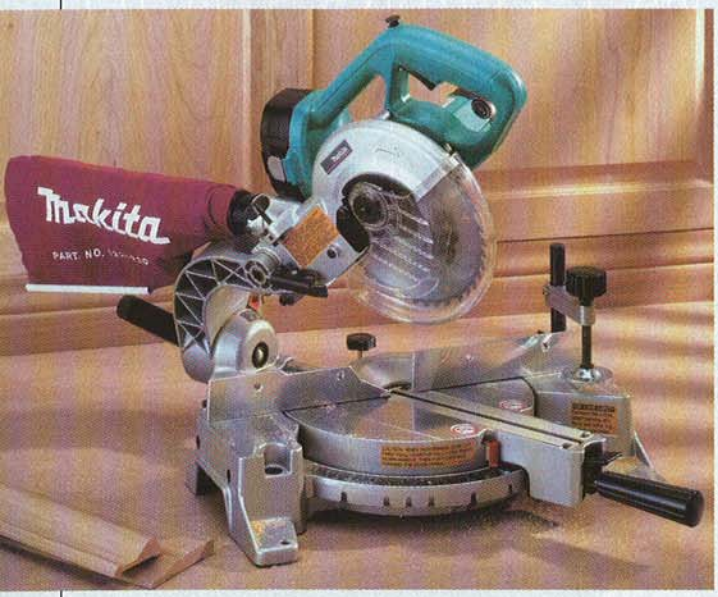
The jig is available at home centers and woodworking stores now and sells for $179. Call Delta at 800/438-2486, or visit the web site at www.deltawoodworking.com.

▲ Milwaukee Introduces 7¼" Adjustable-Handle Circular Saw

User-friendliness in a dependable tool describes the angle Milwaukee takes with its new 7¼" Adjustable-Handle Circular Saw. The 8-position main handle with the company's Tilt-Lok feature adapts to many working positions. Packing 15 amps, the new saw weighs just over 10 pounds. Some other features include: cushion grip front and rear handles, and a convenient 0-50° bevel scale that faces you, the operator, rather than forcing you to bend forward to have to read the scale.

The saw is available in stores now and sells for $165 or $185 with case. Call 414/783-8311, or visit the web site at www.mil-electric-tool.com.

new PRODUCT preview



Makita Introduces the First Cordless Sliding Compound Mitersaw

Mitersaws make a woodworker's life easier to begin with, but the concept of a cordless one is going to take woodworking to another level—because you'll find ways to wander farther and farther from the shop. There will be no hassle with extension cords and no problem losing power from having too long an extension cord. Modeled after the LS0711 (a similar saw with a cord), the LS711DWBEK weighs just over 23 pounds. It comes with a 7½" blade, and requires an 18-volt battery (two Ni-MH batteries come with the saw). Standard accessories include dust bag, box wrench, 40-tooth carbide-tipped blade, and vertical vise.

Another addition to the Makita cordless family is a 2" handheld planer that weighs about 4.5 pounds and uses a 12-volt battery—enough power per charge to plane up to 140 feet at a depth of 1/64". The planer is capable of 18,000 cuts per minute. The 1050DWA planer kit contains a Ni-Cad battery, dust bag, guide rule, quad-voltage charger, and carrying case.

The estimated price for the mitersaw is $520 when it debuts in September. The planer is available now and sells for under $300. Call Makita at 800/462-5482 for information, or visit the web site at www.makitatools.com.

Shhhh!! Craftsman Introduces a Quieter Shop Vacuum

Craftsman's new Low-Profile Convertible Wet/Dry Vac (model 17016) is 30 percent quieter than the earlier versions of the 16-gallon model, according to Sears officials. Designers accomplished this by channeling the exhaust air through a foam filter. The 17016—a 22"-high unit—fits nicely under a workbench, and is designed to be tip-proof. It's a powerful vacuum, too, with 5.5 peak hp from its 1.4-amp motor that moves 165 cubic feet of air per minute. It converts to a blower (but does not have a detachable blower).

A slightly more powerful cousin with 6.25 peak hp (model 17026) comes with a detachable blower and other accessories that have more applications to your yard and house than your shop. Both models are available at Sears. Model 17016 sells for $120. Model 17026 (the one with the detachable blower) costs $140. Call 800/377-7414 for more information, or visit the web site at www.sears.com/craftsman.

Porter-Cable's Cordless Line Expands With Drill, Circular Saw, and Flashlight

The magic number at Porter-Cable these days is 19.2—as in the 19.2-volt battery that will power its new drill/driver, circular saw, and flashlight. That's nearly an extra 5 volts of power more than the existing P-C line, power that will get you through nearly any task.

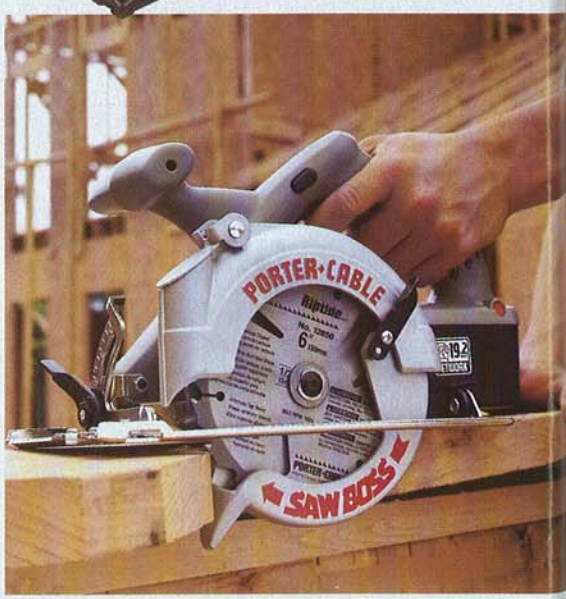
The P-C 9884 Drill/Driver has a 20-position clutch including solid lock-up, 2-position gearbox, a heavy-duty-motor, and built-in bit storage. It comes with a battery charger, two batteries, double-ended bit, and a carrying case. (The P-C 9887 Cordless Hammer Drill/Driver is similar and features ½" bit capacity.) The Drill/Driver retails for $299.

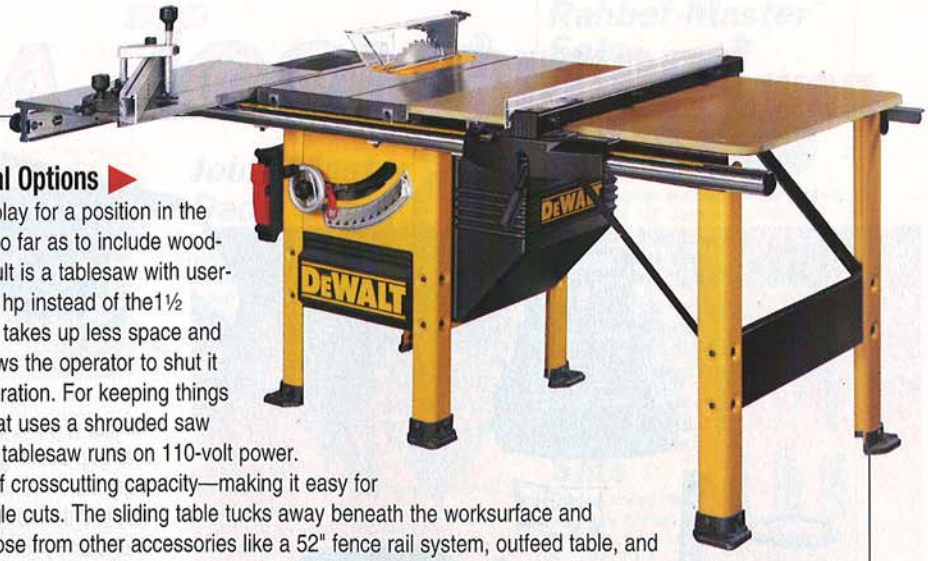
The P-C 9845 Circular Saw has a 6" blade capable of cutting 2× lumber at 45° in one pass. With a top speed of 2600 rpm, it can make up to 40 crosscuts on 2×8 material on a single charge. A dust nozzle diverts chips and dust away from your work. It comes with a charger, two batteries, a carbide-tipped blade, and carrying case. It should retail for about $299.

The same battery powers the P-C 881 flashlight. The head of the lamp swivels up to 110° to put light where you need it. The long-life xenon bulb will shine bright during its average 3-hour-run per charge. It retails for $30.

Porter-Cable has a package deal for the cordless saw and drill driver (9884CS), including 2 batteries and a charger, for $399.

All the P-C cordless items will be available in September at home centers. Call 800/487-8665 or visit the web site at www.porter-cable.com.

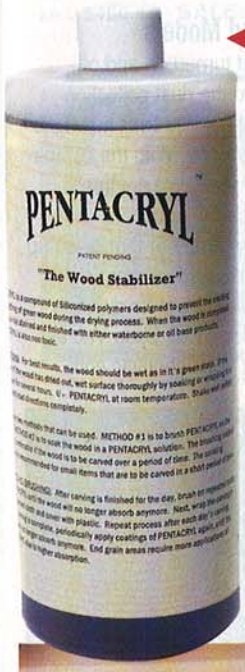




DeWalt Debuts Stationary Tablesaw With Several Options

With its new multifaceted tablesaw, DeWalt is making a play for a position in the woodshops of the 21st century. Company officials went so far as to include woodworkers during the design phase of the DW746. The result is a tablesaw with user-friendly options such as an inboard induction motor—1¾ hp instead of the1½ found on most contractor's tablesaws—that DeWalt says takes up less space and creates less vibration. An easy-access power switch allows the operator to shut it off with a knee so he can keep an eye on the cutting operation. For keeping things tidy the table has an integrated dust-collection system that uses a shrouded saw blade to channel sawdust to the collection port. The new tablesaw runs on 110-volt power.

Accessories include a sliding table that delivers 30" of crosscutting capacity—making it easy for woodworkers to square large panels and make large angle cuts. The sliding table tucks away beneath the worksurface and doesn't interfere with other operations when stored. Choose from other accessories like a 52" fence rail system, outfeed table, and cast-iron extension wings. Look for the DW746 to be available in October and sell for about $900, excluding accessories. Call 800/433-9258 for information, or visit the web site at www.dewalt.com.



Pentacryl: A Tonic for Wet and Green Wood

No more waiting for months on end for your green wood pieces to season before using them. Craft Supplies USA has a product it claims can reduce the drying time for green wood by 90 percent when applied correctly. Pentacryl, originally developed for treating waterlogged timber, is said to speed up the seasoning process by displacing moisture in the wood fiber. Craft Supplies says the product will not discolor the wood, nor will it decompose or migrate when exposed to different degrees of temperature or humidity. The manufacturer says you can stain, glue, and finish it without problems. A 2×6×6" bowl blank absorbs about 2 ounces of the product. Available now through mail order for $15 per quart, $45 per gallon. Call 800/551-8876 for information, or visit the web site at www.craftusa.com.

Vega Mini Duplicator Is Affordable and Adaptable

The fans of mini lathes might well become fans of the Vega Mini Duplicator because of its affordability and adaptability—it fits most of the popular mini lathes on the market. At just under $200, the Vega machine buys plenty of "expertise" in a hurry, the manufacturer says. With very little woodturning experience, operators can quickly do intricate work, such as pen turning, and produce larger items such as candlesticks and chess pieces. You can buy the Vega Mini Duplicator now for $199. Call Vega Enterprises at 800/222-8342 for information.

New Power Tenon Cutters Ease Rustic Furniture Construction

If rustic furniture building excites you, a new line of power tenon cutters by Veritas promises to make your life easier. The aluminum body power tenon cutters are designed to cut smooth tenons with radiused shoulders—and to run vibration-free in concert with your electric drill. Veritas says an integrated level vial should keep your cuts true. The large set comes in five sizes from ⅝" to 2". The mini cutter set ranges from ¼" to 9/16".

The power tenon cutters are available from Lee Valley & Veritas. They come individually or in sets of 3 or 5 cutters. A power tenon cutter set of 5 costs $250 ($52 to $62 for individual cutters). The mini tenon cutters sell individually for $18 to $24. Call 613/596-0350 for information, or visit the web site at www.leevalley.com.

new PRODUCT preview

▲ Combination Wrench/Locking Pliers Turns Heads

There are times when neither an adjustable wrench nor a locking pliers alone can get the job done. What you need is a little bit of both, and that's what Stanley has come up with in its new MaxGrip Locking Adjustable Wrench. Stanley says it won't slip like an adjustable wrench sometimes does because of the locking function. You can find the 10" MaxGrip model 85-610 at most home centers. It costs $25. Call Stanley for more information at 860/225-5111, or visit the web site: www.stanleyworks.com.

◀ Shop Vac Picks Up the Pace With OnDemand Models

Wouldn't it be great if there was a shop vacuum that turned on and off when your power tools do, one that was plugged into the dust-collection ports on the tools, one that whisked away debris without you ever having to worry about it? Well, Shop Vac officials say they have one. With the company's new line of QSPro wet-dry vacs it's as they say in the old commercials—no muss, no fuss. OnDemand models include an 8-gallon unit with 3.0 hp (925-64) and a 10-gallon unit with 4.5 peak hp (925-65) that clean up at the rate of 120 and 165 cubic feet of air per minute, respectively. Both have 12' hoses. The OnDemand models are available now at hardware stores and sell for $148 (8-gallon) and $168 (10-gallon). Call Shop Vac at 570/326-3557 for information, or visit the web site at www.shopvac.com.

◀ New Edge Clamp Could Be Hands-Down Winner

There's nothing like a free hand when you're in the middle of a project, especially when that free hand could be operating a clamp that's bending solid wood edging onto curves. Bessey says you can do just that with its Professional One-Hand Edge Clamp. A compound screw mechanism allows you to simultaneously engage the top and bottom pressure pads while applying pressure to the front edge of a countertop.

The Bessey EKT-55 has a maximum clamping pressure of 500 pounds, and can handle countertop thicknesses of up to 2¼". The Professional One-Hand Clamp is available now and sells for $60. Call American Clamping Corporation at 716/344-1160 for more information, or visit the web site at www.americanclamping.com.

Create a Safe, Portable Workstation With InstaFence ▶

Footprint Tools' new InstaFence is a great companion to mitersaws. To create a portable mitersaw workstation, set up your portable workbench (such as a Black & Decker Workmate), locate the mitersaw in the middle of it, clamp down the InstaFence using the workbench jaws, shim the mitersaw, and then clamp it to the bench. The fence is made of PVC and supports workpieces up to 8' long. InstaFence works best with 10" or smaller mitersaws. The InstaFence should be available in August and sells for $22. Call Footprint Tools at 905/564-6007 for information.

new PRODUCT preview

▼ CMT Introduces Downsized Raised Panel and Rail & Stile Set

If you're ready to tackle smaller-scale items such as jewelry boxes, humidors, clocks, or banks that feature raised panels, check out CMT's new line of router bits. The Marc Sommerfeld Junior Raised Panel and Rail & Stile Set borrows from conventional-size raised-panel design for these more delicate keepsake items. The Sommerfeld system can accommodate material thicknesses from 7/16" to 1 1/16". Make frames and raised panels as small as 2¾×2¾". Just like a previously introduced full-size Sommerfeld set, the Junior one has the advantage of a back-cutter for the panel to mill a 5/32" tongue with the relief on the back of the panel—all in one pass.

The Sommerfeld Junior Set (item 800.518.11) is available in ½" shank and sells for $236. Call CMT at 888/268-2487 for information, or visit the web site at www.cmtusa.com.

▲ Black & Decker 'FireStorm' Line Adds a Low-Cost Cordless Circular Saw

A $120 price distinguishes Black & Decker's new cordless circular saw. Following closely on the heels of its successful debut of a FireStorm cordless drill line, the 14.4-volt saw seems right in the thick of the competition. It can cut 70 2x4s on a single charge and sports 56-in./lbs torque. Other features include an electronic brake that stops the blade in under 1.5 seconds. The saw comes with a 5⅜" carbide-tipped blade, charger, battery, and case.

The Black & Decker Cordless Circular Saw (model C144) is available in September and sells for $120. Call Black & Decker at 800/54HOW-TO for information, or visit the web site at www.blackanddecker.com.

◀ New Foam Puts Out The Fire, Cleans Up With Water

Nobody ever thinks they're going to have a fire in their shop or home, but accidents do happen. That's why a fire extinguisher belongs in every shop. Knowing this, Kidde Safety developed one with a foam it says can be effective on wood, paper, cloth, oil, gasoline, grease, electrical, and flammable liquid fires—and, get this—cleans up by simply washing the sprayed areas with water. Fire Out Foam, a non-toxic aqueous film-forming foam, fights the fire. A simplified operation system only requires the user to pull the pin, aim the nozzle at the center of the fire, and squeeze the handle to spray.

The Kidde Safety Foam Fire Extinguisher is available at home centers and sells for $50. Call Kidde Safety at 919/563-5911 for information, or visit the web site at www.kidde.com.

▲ 'Dust Picker' Not Picky About Location

Penn State Industries (PSI) Woodworking Products has a new Dust Picker Positioning System it believes will whisk that sawdust away no matter where or what you're working on in the shop. The system has three segments that extend 22" to 32" each, giving you up to 8' of reach. The system clamps to a table or mounts to a wall or ceiling using a mounting flange. The PSI system includes 8' of 4" flex hose, two dust hoods (2½"×10" round), and a splice to the main collection system.

The PSI #DPICKER is available in September and sells for $80. Call PSI at 800/377-7297 for information, or visit the web site at www.pennstateind.com.

redesigns teach OLD products NEW tricks

Old Standbys Add User-Friendly Features and Practical New Twists

Just as you're always trying to improve your work, the manufacturers are hard at it finding ways to make their products work better for you. Some of the changes may seem minor, but when you consider that all of these products were already high achievers before their recent metamorphosis, you know that drastic changes aren't necessary.

▶ American Tool's Quick-Grip Clamp Just Got Quicker

The makers of the Quick-Grip Clamp/Spreader just added the words Quick-Change to its title. And in the process they've lessened the amount of time you'll spend converting the tool from clamp to spreader and back. The new Quick-Change Bar Clamp/Spreader can now accomplish that change without using screwdrivers and hex keys as in the past. One-handed operation with the pistol grip helps when clamping, assembling, spreading, gluing, and positioning. The new Quick Change comes in six lengths ranging from 6" to 50". New pads should stay put on the jaws and your work. And this tool—now done up in bright yellow—will be easy to find in the shop.

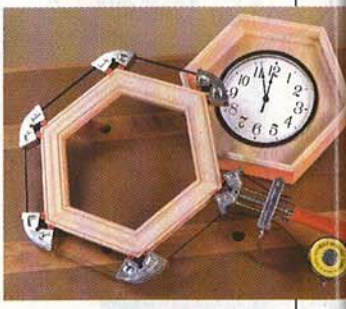
You can buy the 12", 24", and 36" Quick-Grip Quick-Change Bar Clamp/Spreader now; the 6", 18", and 50" versions will be available in September. Suggested retail prices range from $25 to $47 each, depending on size. Call 847/478-1090 for information, or visit the web site at www.americantool.com.

◀ New Consumer-Size Glue Products Will Stick to Hobbyists

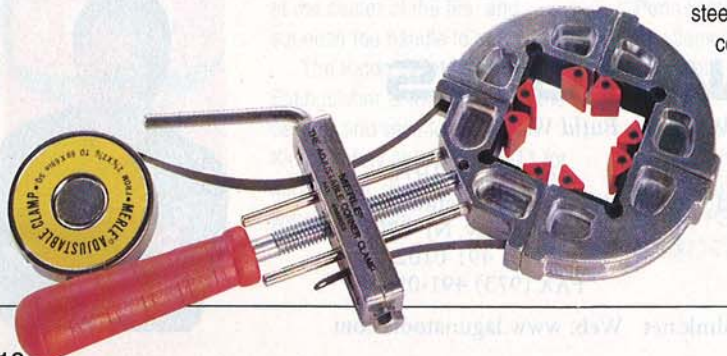
When you're assembling projects with lots of glued surfaces, such as a tabletop, it sure helps to use a glue with ample "open time." Then you won't be in a panic trying to get workpieces lined up, and clamps in place, before the glue begins to set up. To address this need, Franklin has for some time made available "Extend" versions of Titebond and water-resistant Titebond II. The only catch: You had to buy at least a gallon of it. No more. Now, you can buy Titebond Extend and Titebond II Extend in a 16-ounce bottle. Both products have an open time of 10–15 minutes, compared to 3–5 minutes for the non-Extend products.

Call Franklin International at 800/669-4583 for more information or visit the web site at www.franklini.com.

▼ MLCS Creates Clamp Jaw Inserts For All Shapes



There will be no more shape-aphobia with this new Merle Clamp accessory from MLCS. Bring on the pentagons, hexagons, octagons, and, of course, the rectangles and squares for typical frames. New dual pivot jaw inserts allow the clamp to adapt to any configuration. You can tackle clamp jobs from 3×3" to 69×69". The clamp is sold with 23' of steel banding and a set of four aluminum corners. It's up to your imagination to find the applications. You can buy additional aluminum corners and jaw inserts.



The new clamping system is available now through the MLCS catalog for $27 each, or $25 each in quantities of 4 or more. Call MLCS at 800/533-9298 for more information, or access the web site at www.mlcswoodworking.com.

and now, for SOMETHING entirely NEW

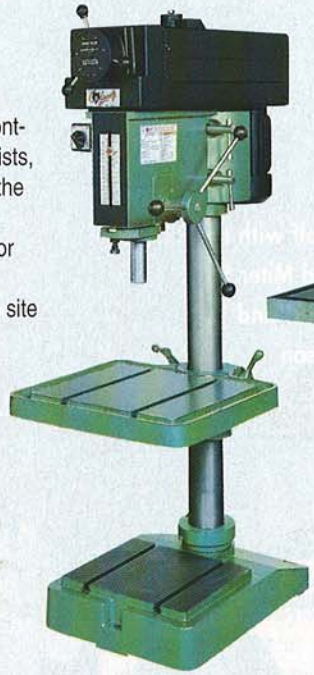
Several Manufacturers Have Launched Completely New Lines of Equipment or Accessories

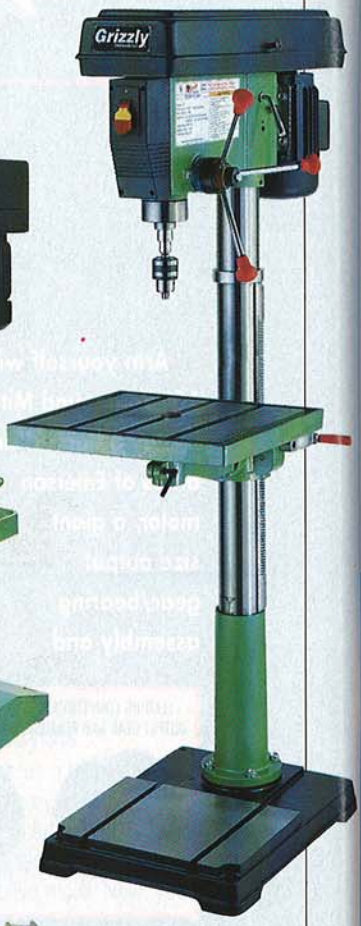
In case you're wondering about the clout of woodworkers in the tool market, consider that some manufacturers have redesigned or created new lines with just you in mind. The result: You have more options to choose from in brands and features than ever before.

Grizzly Completely Revamps Its Drill Press Line ▶

Eight new drill presses—ranging from benchtops with ⅓-hp motors to variable-speed commercial floor models with 2-hp motors—stand out among Grizzly Industrial's newest offerings. Each press accepts a wide variety of accessories and has a front-mounted safety switch. The smallest model (G7942), aimed at hobbyists, has five speeds. Spindle travel is 2", and it has an 8" swing. From there the number of speeds and options goes up along with the size of motor.

The eight Grizzly drill presses are available now and sell for from $79 for the mini drill press (model G7942) to $1,495 for the largest unit, G7108. Call Grizzly at 800/523-4777, or visit the web site at www.grizzlyindustrial.com.





MLCS Launches Katana Line of Premium Router Bits ▶

The lifetime guarantee on the new Katana line of router bits speaks for itself. And the company says its micro-grain carbide cutters will provide a long cutting life and multiple resharpenings. High hook and shear angles promise clean, splinter-free cuts. The bits have an antikickback design and a non-stick coating that envelops the solid bar stock steel construction.

The Katana line of router bits will be available from MLCS in September. A ¾" round-over with ½" shank sells for $37. Call MLCS at 800/533-9298 for information, or visit the web site at www.mlcswoodworking.com.

General's New Division Focusing on Lower-Cost Machinery ▶

You may already know about General Machinery, a producer of high-quality woodworking machinery in Quebec. Now, General has a new division, called General International, that imports woodworking machinery from the Far East. The line includes drill presses, tablesaws, jointers, planer/molders, planers, bandsaws, dust collectors, power feeders, wood shapers, sanders, pneumatic cutoff saws, metal-cutting bandsaws, and accessories.

General International's line is available at about a dozen U.S. dealers and competes pricewise with other brands imported from Taiwan and sold through distributors. Call General International at 514/326-1161, or visit the General Machinery web site at www.general.ca.

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You've encouraged us so much by your participation at WOOD ONLINE and at our four virtual woodworking trade shows that we've created something we think you'll like just as much. It's called the WOOD MALL (found at www.woodmall.com). As the name implies it's a large number of woodworking tool and supply "stores" you can go to anytime day or night for information about the companies' current product offerings. Heck, you can even securely buy items right online if you want. If some of the companies we have listed are new to you, check out our Product Index for a categorized listing of merchandise. Don't have time to look through each store for a particular tool or supply? Then try our Mall Search function to find just that special tool or router bit.

To help you make informed shopping decisions, we've added quite a list of tool-comparison charts, compiled from past issues of *WOOD*® magazine. We'll be updating the charts as manufacturers add new tools, so check back often.

Also, for the best deals on woodworking tools and supplies, don't forget to review all the items in the Specials Section. Before leaving the mall, please register for our monthly sweepstakes or FREE downloadable plan. It only takes a minute.

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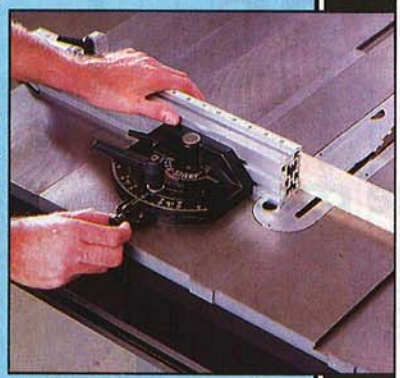

We do not recommend operating without the saw blade guard, as is shown here.
US Patent #5,038,486

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PRODUCTS THAT PERFORM

SHOP TESTED

A dovetailing jig as easy to set up as it is versatile

Dovetail joinery adds beauty and class to even the simplest projects, but jigs that do through dovetails can be perplexing and time-consuming to set up. That's why I was intrigued with the Katie Jig's "ready to use, out of the box" boast. Although I found that claim to be not entirely true, it is the simplest-to-set-up jig I've yet seen.

Other than having to add a scrapwood clamping arm (to secure the jig to your bench or vise), the extruded aluminum Katie Jig comes from the factory pretty much ready to go. Mine arrived with five guides and six spacers installed in the top channel, two edge stops in the bottom channel, and backer boards already attached.

Like other through-dovetailing systems, the Katie Jig uses tuning fork-shaped anodized-aluminum guides to guide top-bearing router bits through the cuts. But, unlike most other jigs, you clamp each side of the joint into the jig, essentially back-to-back. You cut the pin and tail using the same fork, but on opposite sides of the jig, virtually eliminating setup errors.

To make the most of the Katie Jig, I used two ½" routers with collet adapters—one each for the ⅜"-shank dovetail and straight bits that come with the jig—but you could get by with one router and adapter (and a lot of bit-changing). The shank-size struck me as odd, and the manufacturer told me a ¼" version is in the works and should already be on the market by the time you read this.

With the basic package, you can cut dovetails in ½–1"-thick material up to 12" wide, but with accessories the possibilities are endless. For example, with two Katie Jigs joined end-to-end, I dovetailed stock 26½" wide. Also, optional spacers and forks allowed me to vary the pin spacing and even mix box joints and dovetails on the same workpiece. And, by using the jig upside down with the optional router-table handles attached (shown in the photo *below*), I had better control over the dovetail-cutting process than I have had with any other jig.

—Tested by Dave Henderson

PRODUCT SCORECARD

The Katie Jig System

Performance	★ ★ ★ ★ ☆
Price	$250; router table handles, $40; additional guide forks, $20 each
Value	★ ★ ★ ★ ☆

Call Hampton House Inc. at 317/881-8601. Order online or peruse the owners manual at www.katiejig.com.

Continued on page 110

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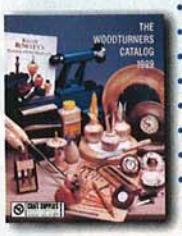

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Circle No. 1285

PRODUCTS THAT PERFORM

SHOP TESTED

Continued from page 108

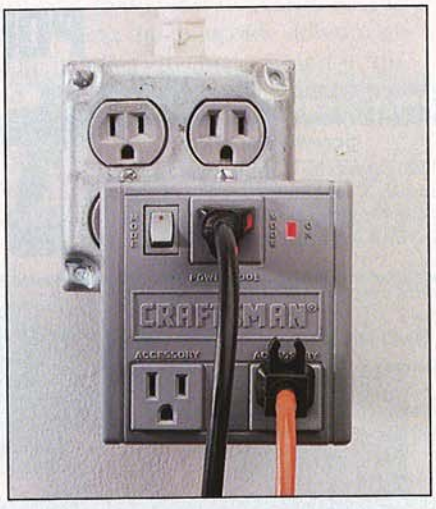
Tool-triggered outlets at a price that won't shock you

Recently, I stumbled across the Craftsman Automatic Power Switch in the Sears catalog, and I did a double-take when I saw the low price. Now that I've tested it, I'm convinced that anyone who uses a shop vacuum to grab tool-generated dust should have at least one.

The Automatic Power Switch works like the tool-triggered outlets built into some shop vacuums: Plug the box into the wall, a tool into the top outlet, and your vacuum or task light into one of the two accessory outlets. When you turn on the tool, the switch immediately turns on your vac or light. Turn off the tool, and the accessory outlet stays "hot" for about 5 seconds to allow your vacuum to clear dust from its hose.

With two triggered receptacles, I hooked my vacuum to one and the task light on my bandsaw to the other, crowding the Automatic Power Switch's 20-amp. rating nearly to its limit. Although I had no problems, it's better designed for dust collection on benchtop tools (such as your random-orbit or belt sander) or lighting alone on stationary tools.

—Tested by Randy Zimmerman



PRODUCT SCORECARD

Craftsman Automatic Power Switch

Performance	★ ★ ★ ★ ★
Price	$20
Value	★ ★ ★ ★ ★

Available at Sears stores.

Continued on page 112

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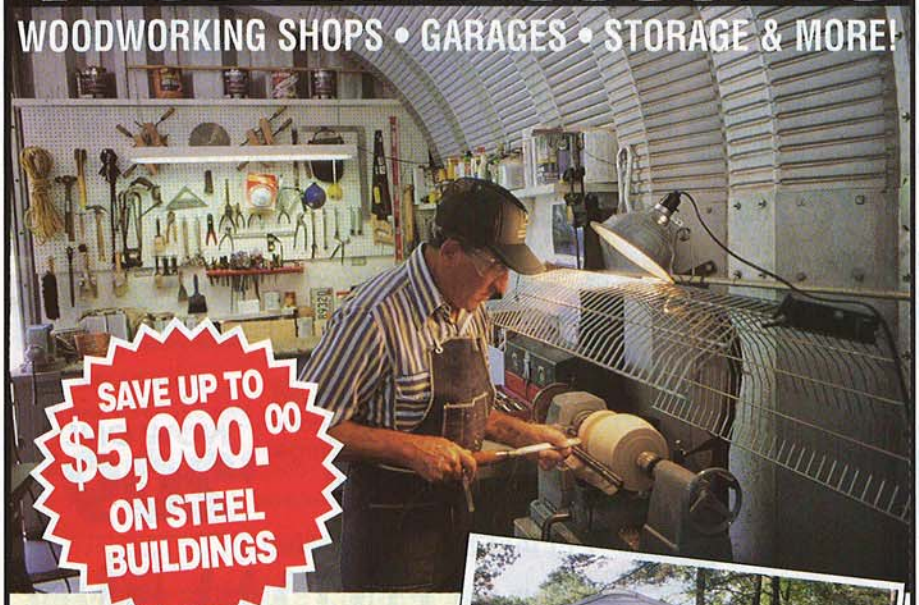

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PRODUCTS THAT PERFORM — SHOP TESTED

Continued from page 110

Clearly a better solution for fighting fog-up

If you've used a full-face mask in the shop, you know it doesn't take long for your breath to make the lens look like a London morning. And wiping away the fog leaves streaks that are almost as hazardous as the fog itself. You can treat that problem with a spritz or two of Parker's Perfect.

Before testing this product, I was skeptical because I've tried so-called "anti-fog" products without much success. So, to challenge it, I treated one half of the shield shown *below* with Parker's Perfect solution, then held it over a commercial clothing steamer to see how it handles a heavy dose of steam. I couldn't believe my eyes: The Parker's-treated side (right in *inset*) stayed clear, while the haze lingered on the untreated side.

I was so impressed I tried it all over the house—eyeglasses, bathroom mirrors, the computer monitor, even the filthy old dust-magnet television screen in my shop. Besides preventing fog-up on all those surfaces, Parker's Perfect acts as an effective anti-static spray. You can buy it in a spray bottle for large applications, such as windshields or mirrors, or get a dropper bottle for treating eyewear, camera lenses, or gun scopes.

—Tested by Dave Henderson

PRODUCT SCORECARD

Parker's Perfect

Performance	★ ★ ★ ★ ★
Price	$8.50 (2 oz. dropper), $11.50 (4 oz. spray) ppd.
Value	★ ★ ★ ★ ☆

For more information, call ParBur Labs, Inc. at 800/884-8005, or visit www.parkersperfect.com.

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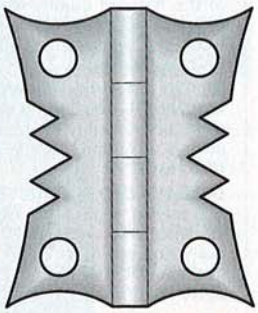
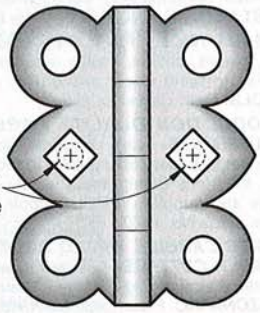
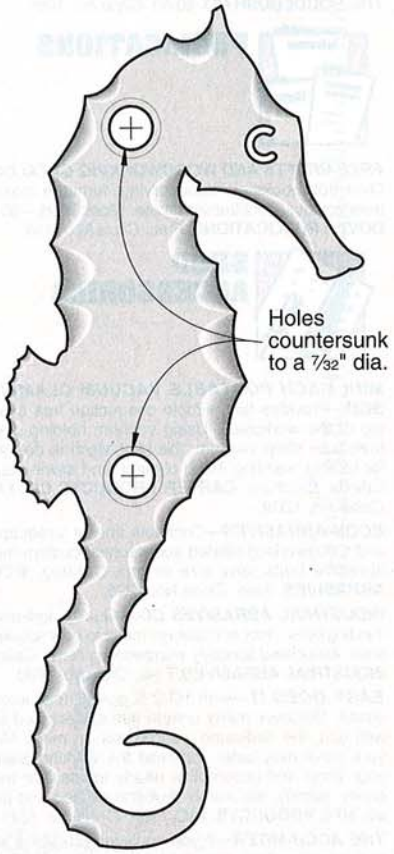
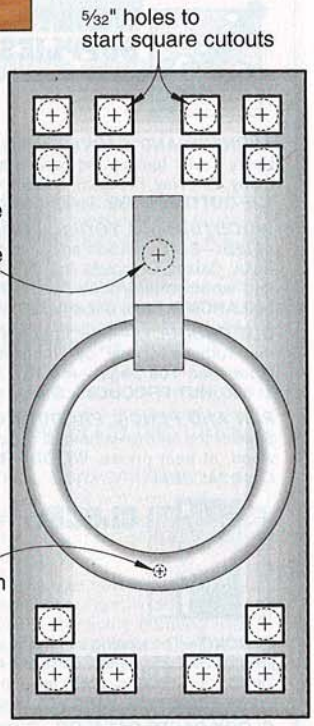
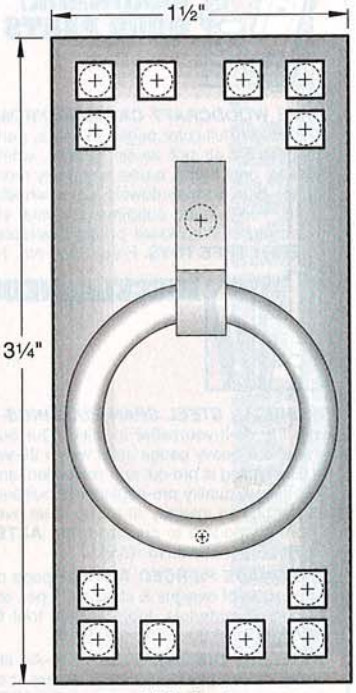
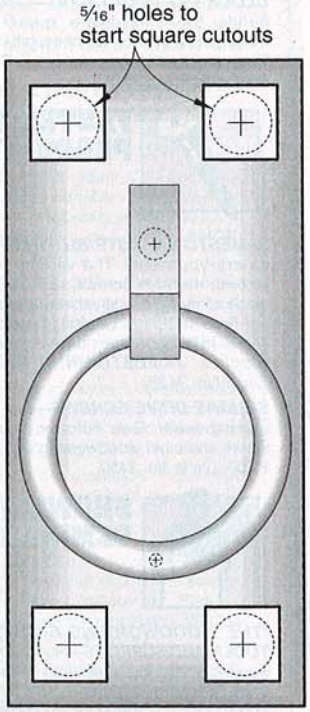


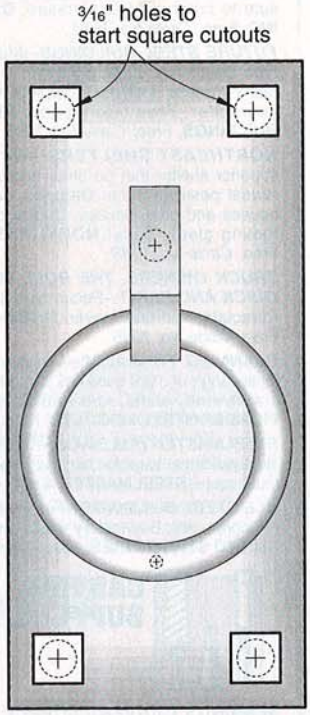


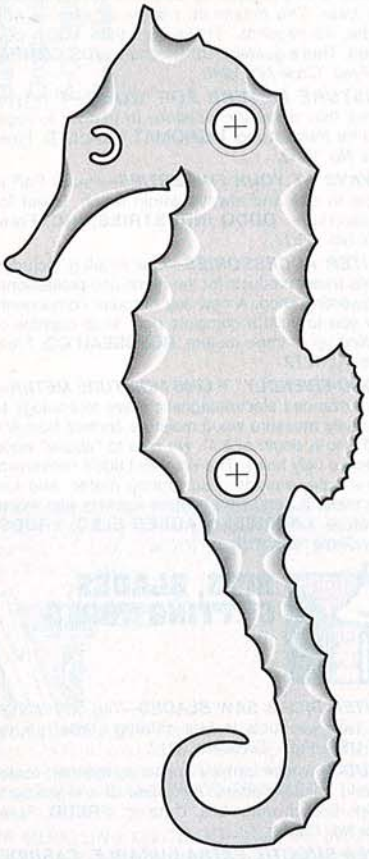












Cloning trees for commerce

Simpson Timber Company in Korbel, California, has been cloning redwood trees for years. Its research foresters find the best forest specimens, snip branches from them, then make cuttings to plant for sprouting in their laboratory. That way, they get superior trees for planting. And the company gets 100 or more clones from a single tree.

In Indonesia, ForBio, an Australian biotech company, is cloning trees, too, but with a slightly different twist. ForBio actually alters the genes of eucalyptus trees—used for paper pulp, millwork, and general construction—to suit its requirements. Using robotics, the company can plant 15,000 snippings a day into a growth medium. When the tiny trees are planted on ForBio's lands, they grow to 38' in 12 months—three times as fast as a "natural" eucalyptus tree in the tropics. By 2003, ForBio plans to produce 50 million cloned trees for a massive, genetically engineered commercial forest.

In a laboratory-like setting, forestry botanists clone trees much as you would house-plant cuttings.

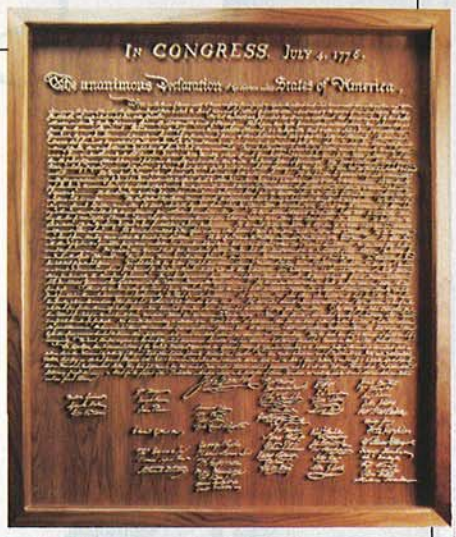
You won't believe this unless you see it—so here it is!

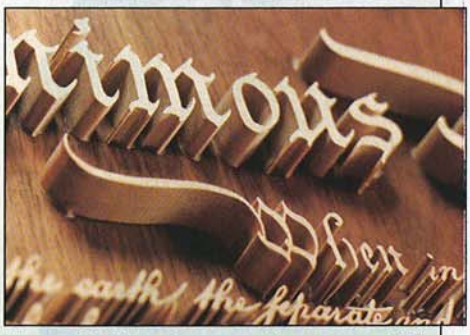
We introduced you to just a bit of Fontana, California, craftsman Bill Thurlow's scrollsawing in *WOOD®* magazine issue 104, page 104 "Forgery by scrollsaw." We published two photos of feature editor Pete Stephano's signature that Bill had duplicated in wood. What we didn't show you then (because we couldn't photograph it at the time) was his all-time masterpiece—a scrollsawn copy of the original Declaration of Independence, shown in the photo and detail at *right*.

Cut from ½"-thick maple on a Hegner scrollsaw and mounted on a backing of walnut plywood, the 42×49⅞" wooden document took Bill about 580 hours over eight years to complete. Here's more:

- It ate up 763 #2 blades.
- The document contains 1,356 words, including the 56 signatures.
- There are 537 periods and dots, 122 commas, and 39 dashes.
- Inside cuts, such as for an "o," number 4,316. Each required a start hole drilled with a #60 drill bit.

For a pattern, Bill made enlarged photocopies of each line in the document. Then, he cut them out, pasted them to the stock, and began sawing. In case you're wondering how Bill developed such a steady hand, he was a county law enforcement officer. And when he was working, his main assignment was to oversee the pistol range. Bill admits that he became a crack shot—able to place one bullet atop another in the target. In his retirement, though, he has redirected his aim to woodworking—and he's still right on target!





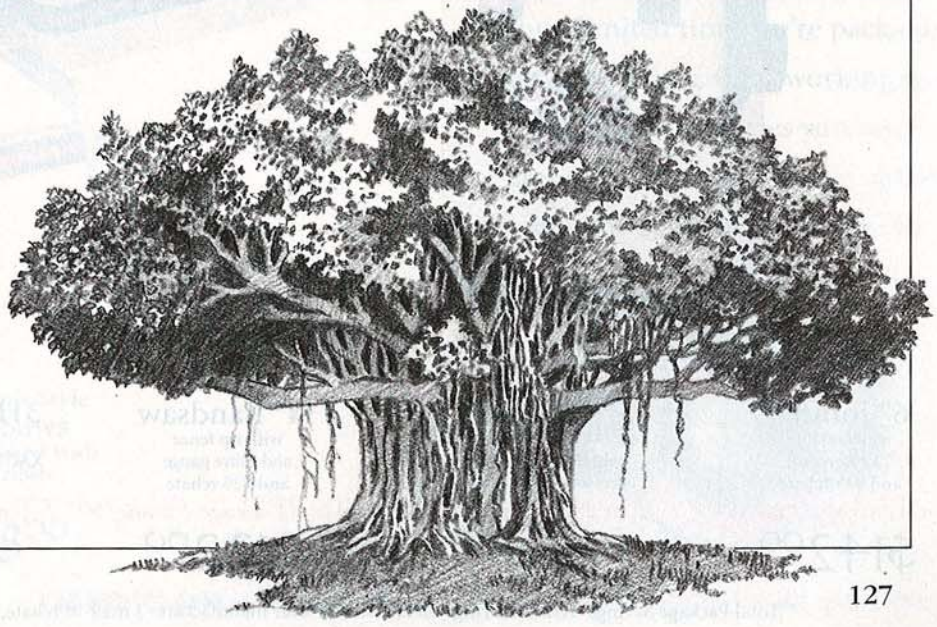
Top. **California scrollsawyer Bill Thurlow spent nearly 600 hours over eight years reproducing the Declaration of Independence in wood.**

Detail. **Letters such as an "O" require drilling a start hole to insert the blade. Bill drilled more than 4,000 of them in the 1,356 words and numbers of the lengthy historical document.**

One tree makes a forest

Growing principally in India and Burma, the peculiar banyon tree produces aerial root shoots from its branches. Eventually these roots anchor in the ground and grow into trunks. In this manner, the tree spreads over a large area. There's one on record with a 2,000' spread around its hundreds of trunks.

Although the banyon produces a lot of wood, the Hindus consider the tree sacred. That's why few banyon boards can be found commercially.



Photographs: Dan Sullivan; scrollsawn images courtesy of Bill Thurlow
Illustration: Jim Stevenson

Better Homes and Gardens®
WOOD® PATTERNS®
NOVEMBER 1999 ISSUE 118

Sleigh Coffee Table • Car/Truck Carrier
Bird Feeder • Tablesaw Accessories Cabinet
Nutcracker Box • Tabletop Lamp

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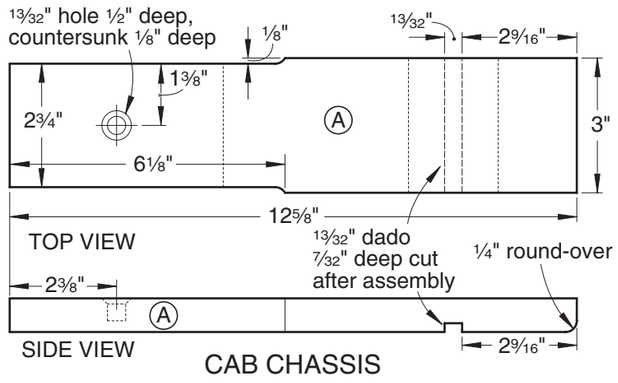
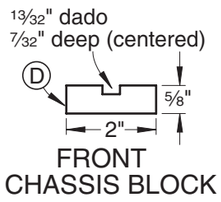
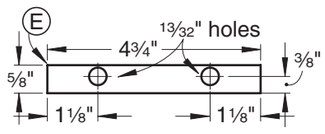


CAB CHASSIS

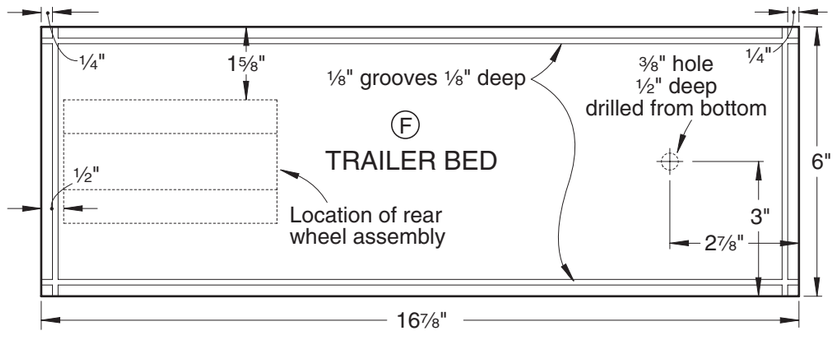


FRONT CHASSIS BLOCK

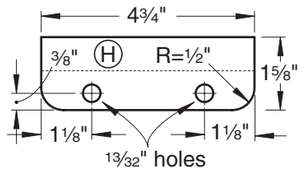


REAR CHASSIS BLOCK

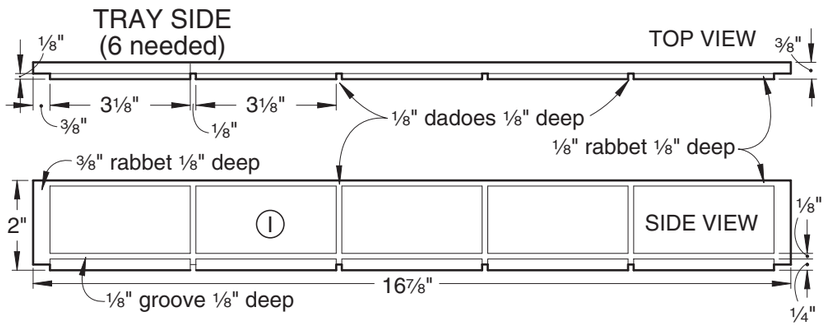
PARTS VIEW



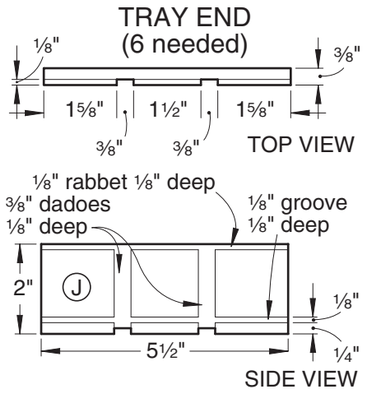
TRAILER CHASSIS (2 needed)



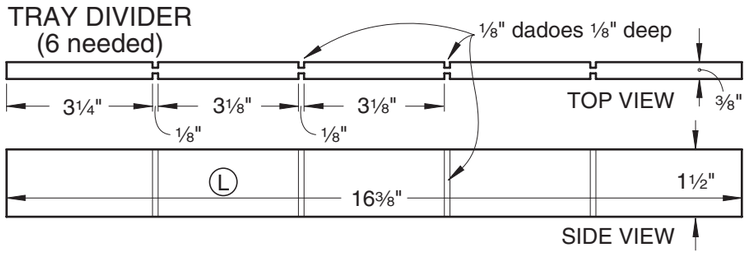
TRAY SIDE (6 needed)



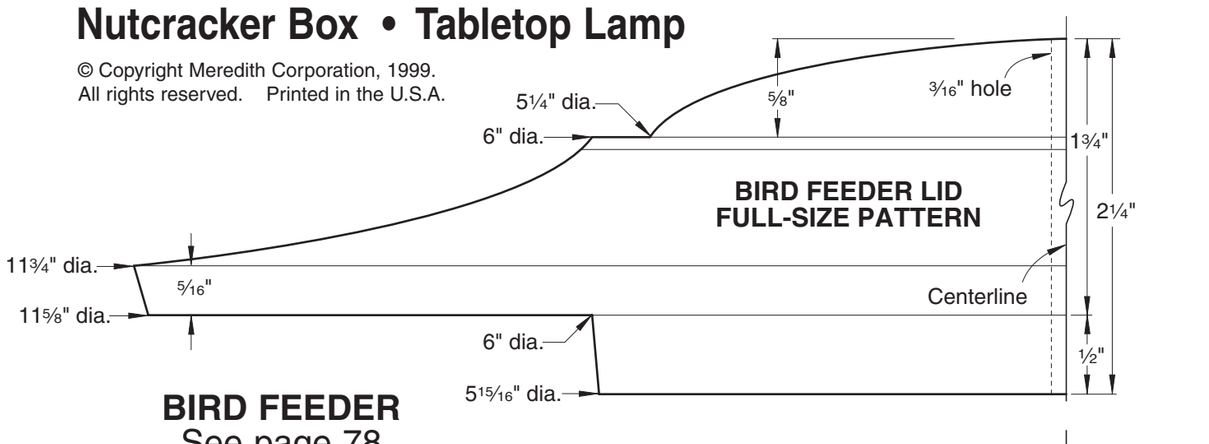
TRAY END (6 needed)



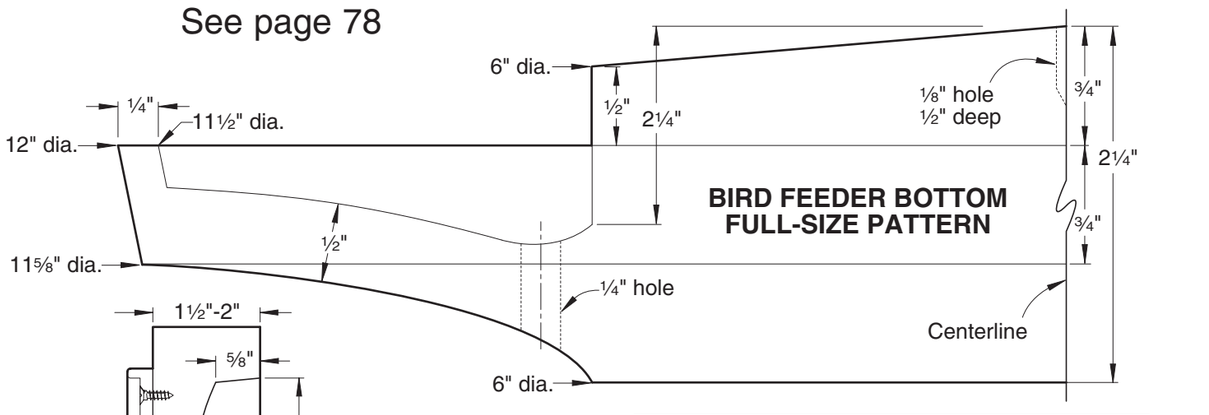
TRAY DIVIDER (6 needed)

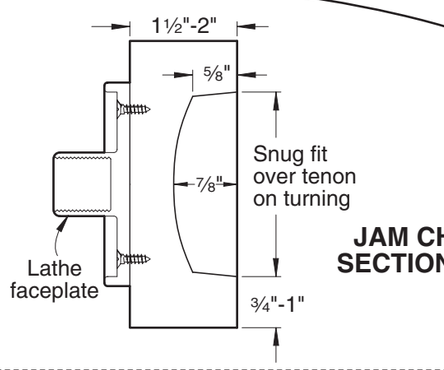


CAR/TRUCK CARRIER
See page 80



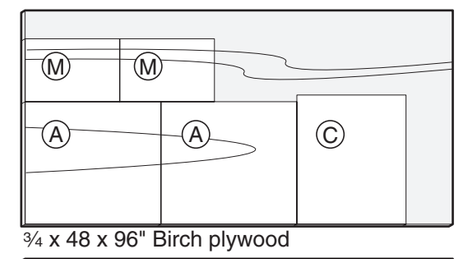
BIRD FEEDER
See page 78



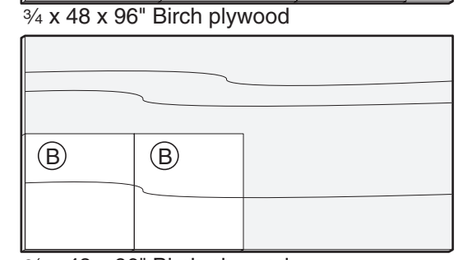


JAM CHUCK SECTION VIEW

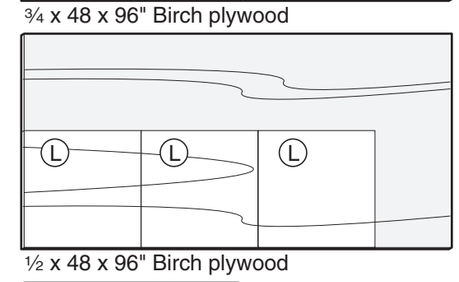
CUTTING DIAGRAM



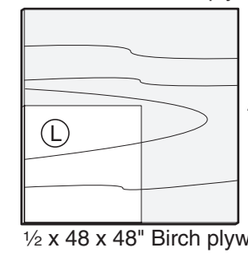
3/4 x 48 x 96" Birch plywood



3/4 x 48 x 96" Birch plywood



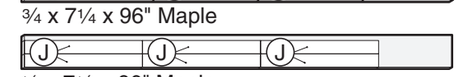
1/2 x 48 x 96" Birch plywood



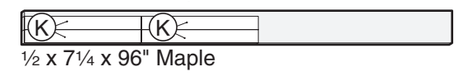
1/2 x 48 x 48" Birch plywood

TABLESAW ACCESSORIES CABINET
See page 62

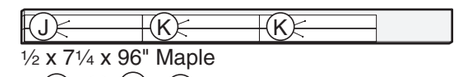
3/4 x 7 1/4 x 96" Maple



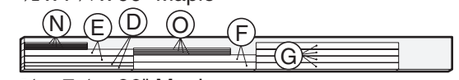
1/2 x 7 1/4 x 96" Maple



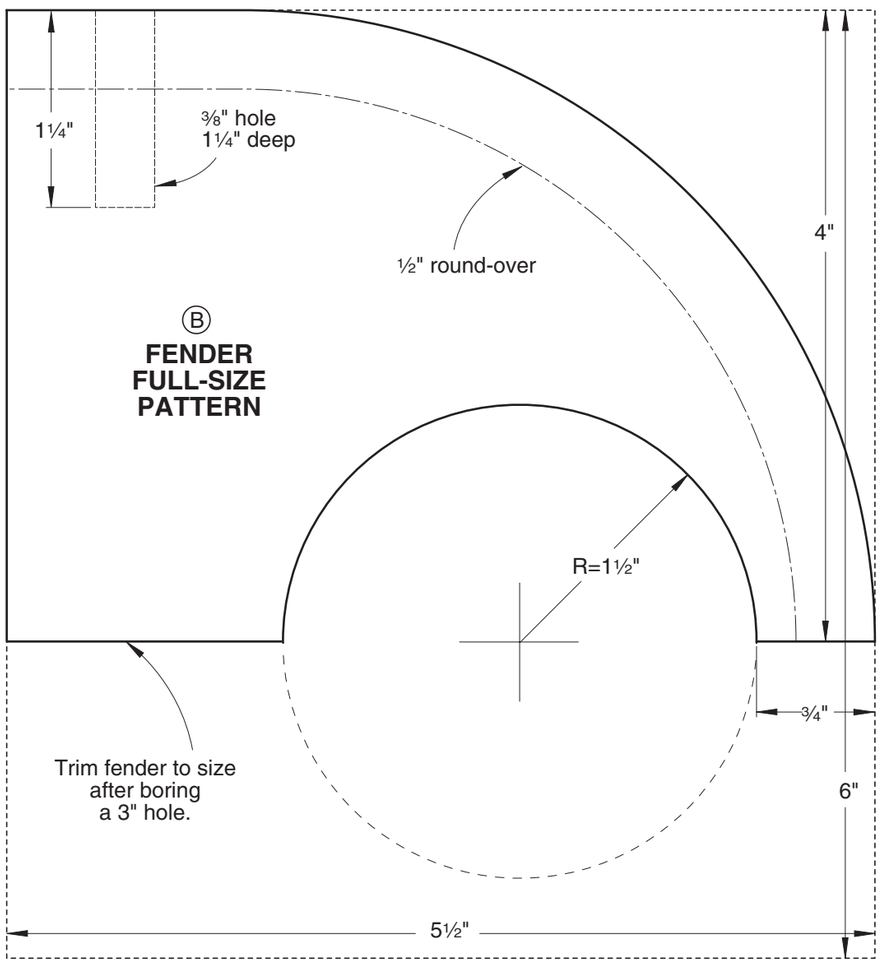
1/2 x 7 1/4 x 96" Maple

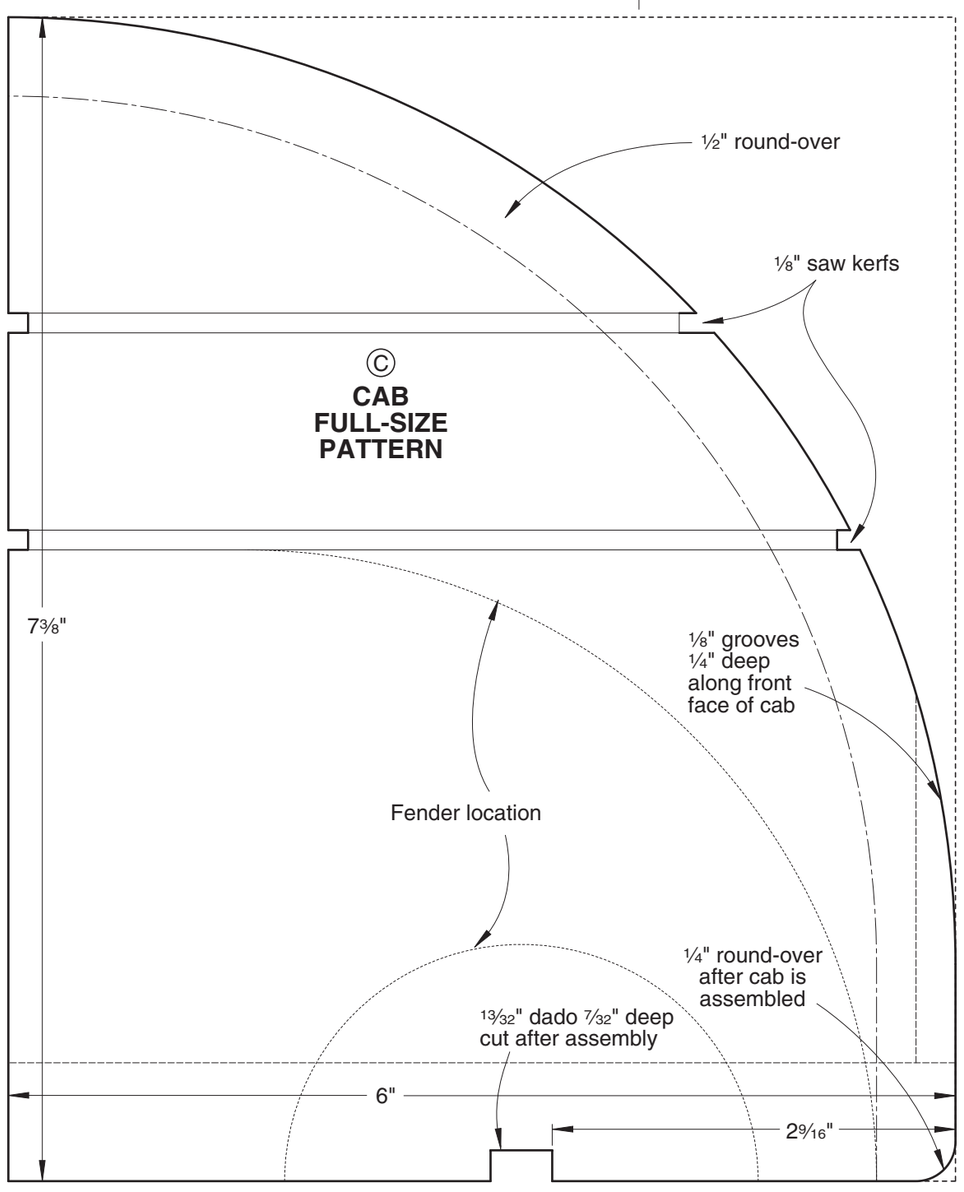


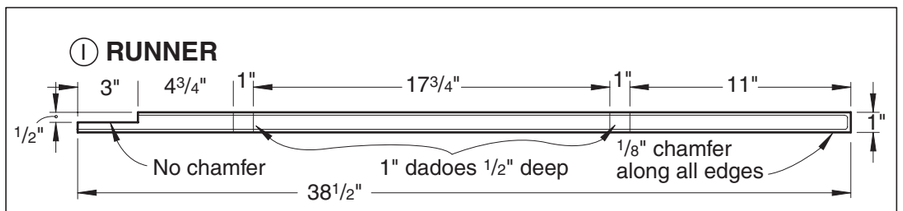
1/2 x 7 1/4 x 96" Maple

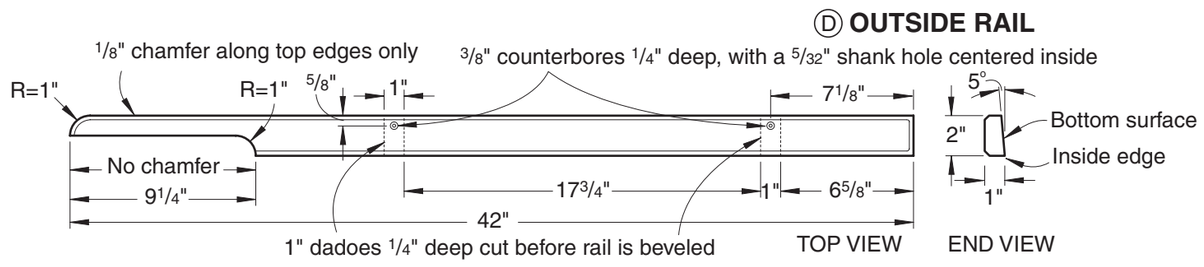


3/4 x 7 1/4 x 96" Maple

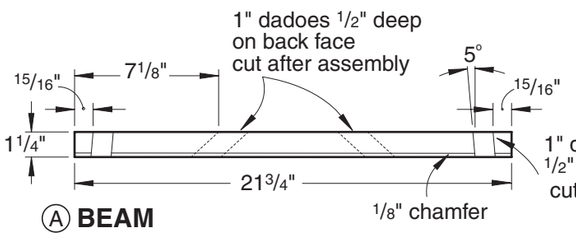


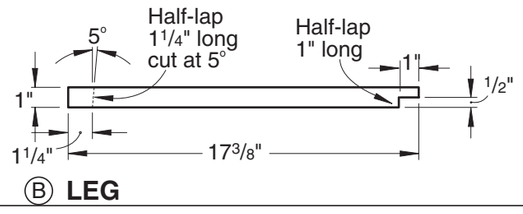




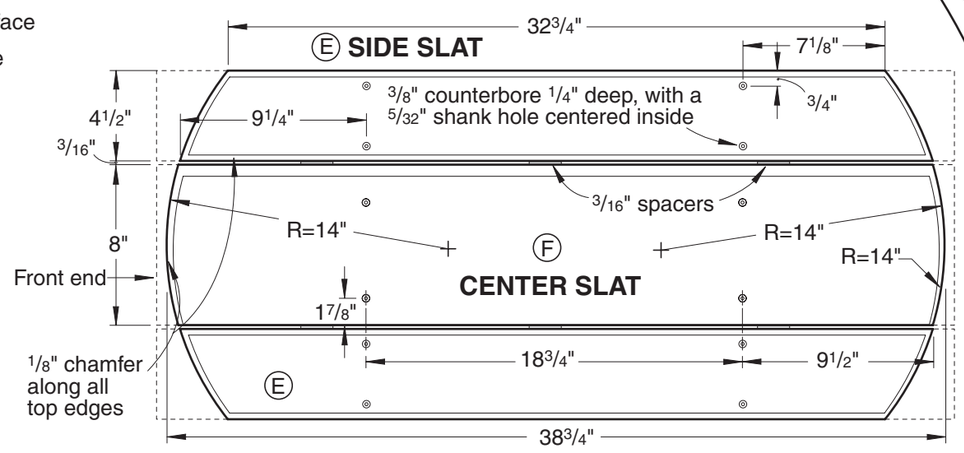


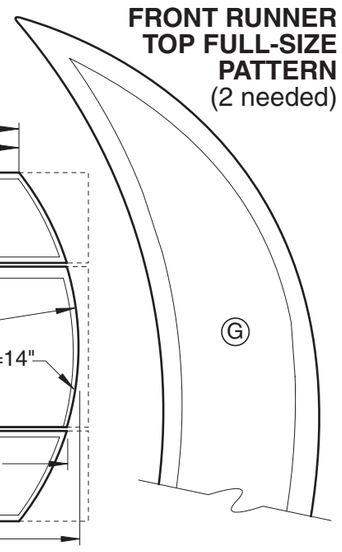
PARTS VIEW



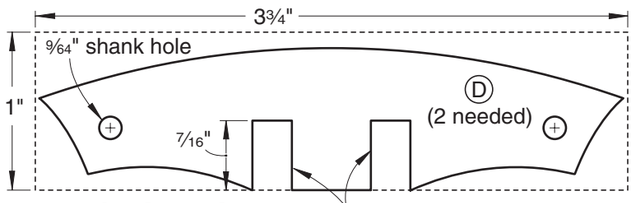


SLEIGH COFFEE TABLE
See page 72



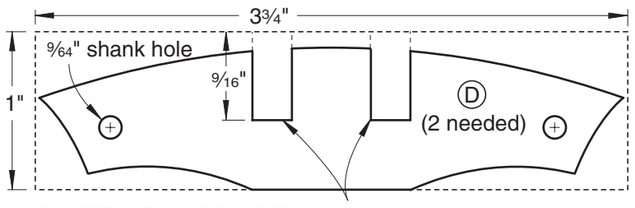


FRONT RUNNER TOP FULL-SIZE PATTERN (2 needed)



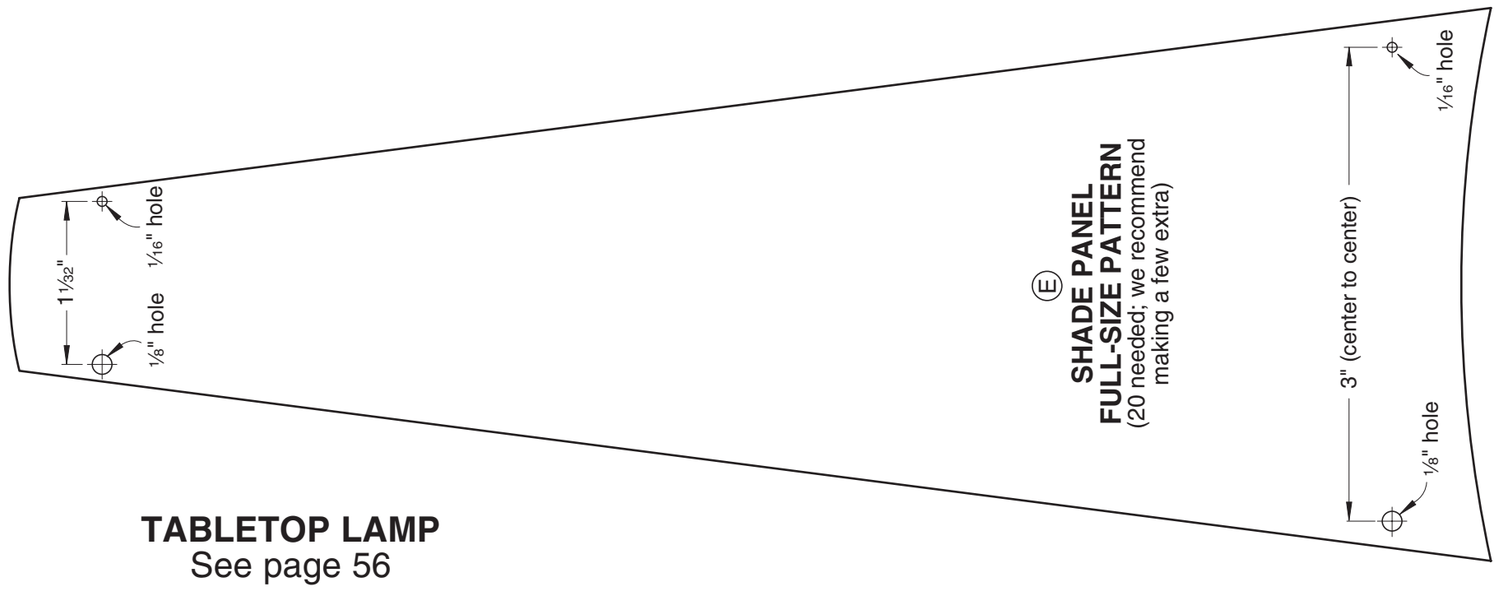
TOP SUPPORT FULL-SIZE PATTERN

Notches cut in bottom edge of top supports



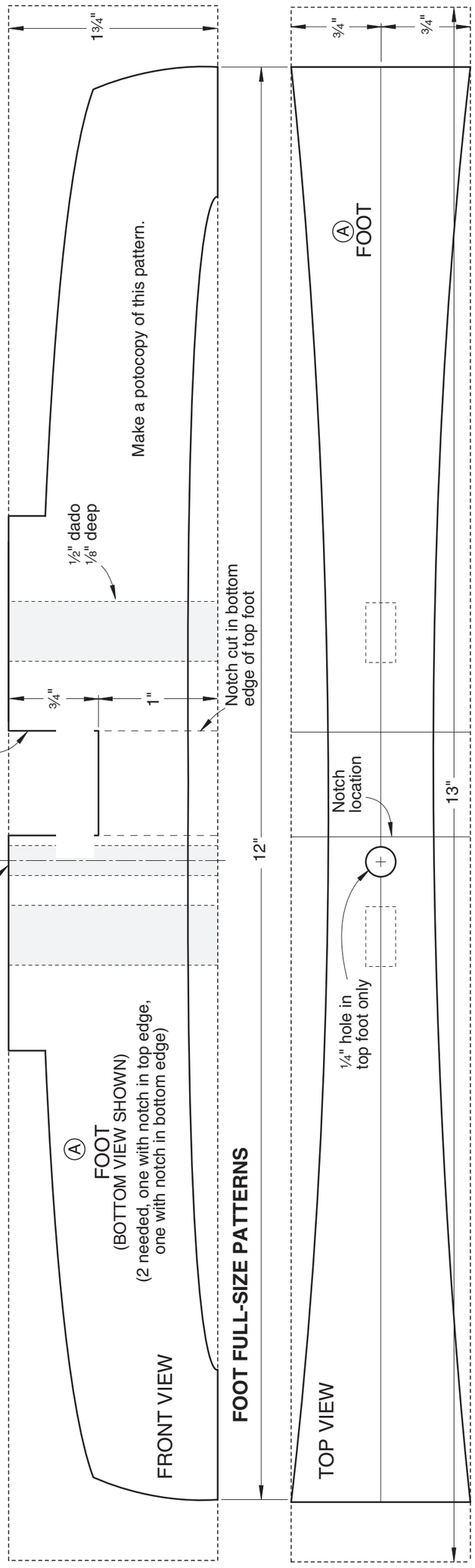
BOTTOM SUPPORT FULL-SIZE PATTERN

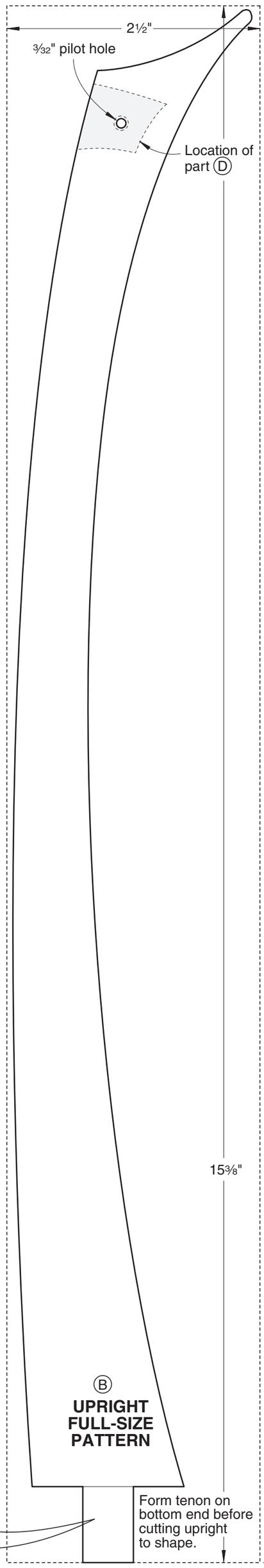
Notches cut in top edge of bottom supports

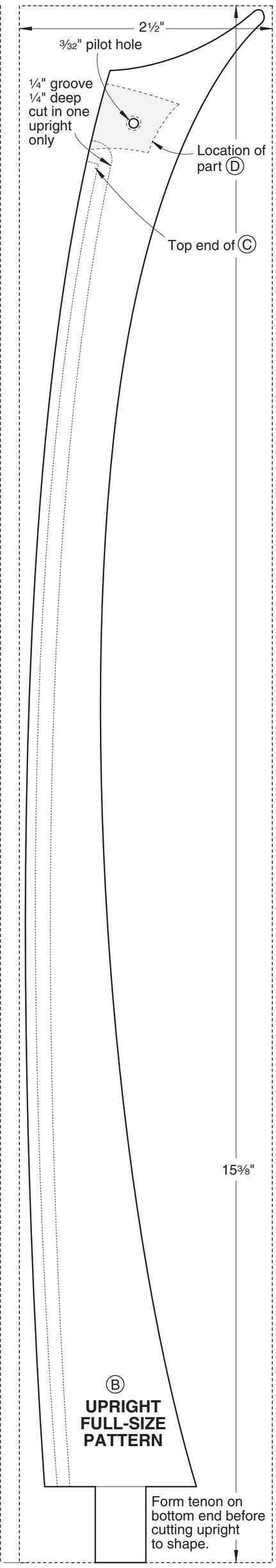


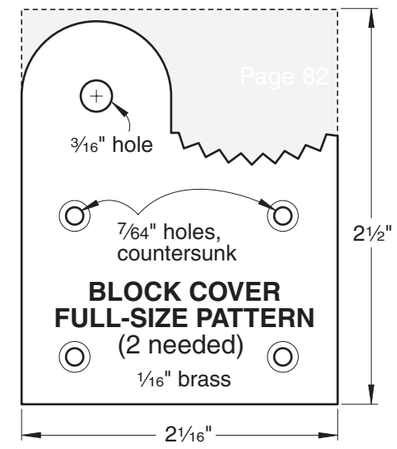
TABLETOP LAMP

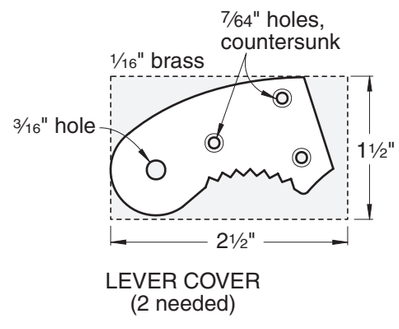
See page 56



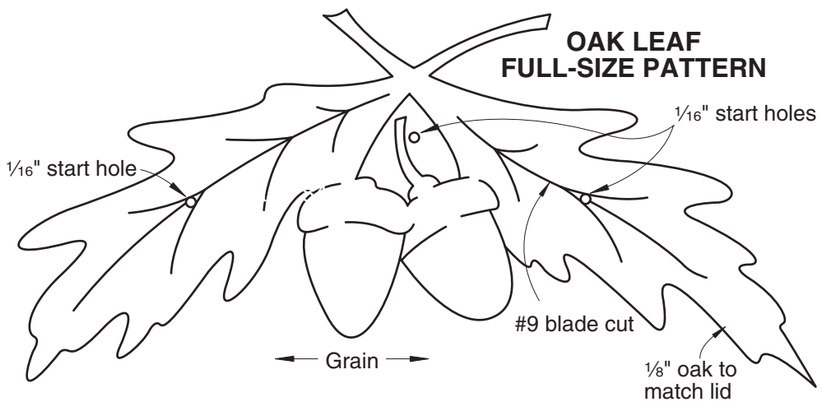


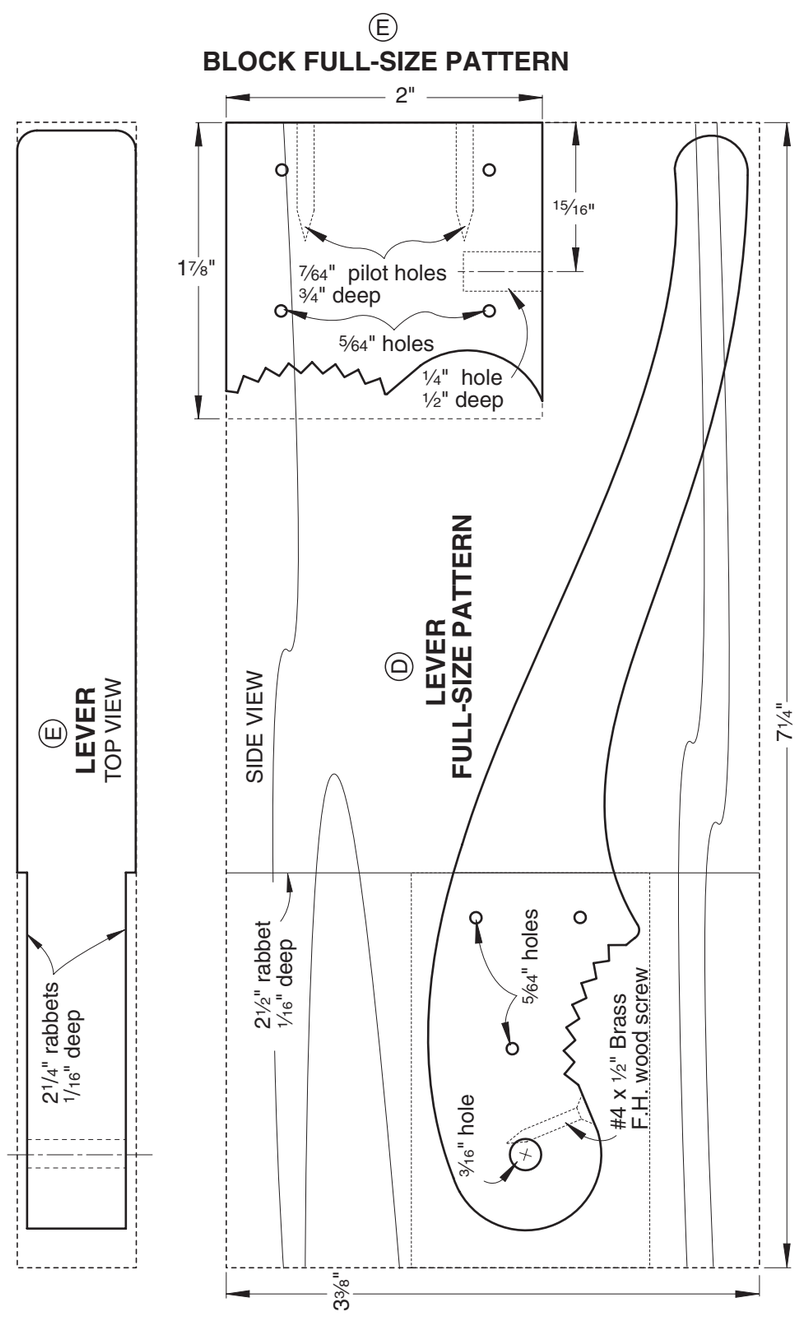






PARTS VIEW



NUTCRACKER BOX

See page 84